

HQ Lp A-F



# PARTS CATALOG

FOR  
ONAN ELECTRIC GENERATING PLANTS

•  
HQ  
*Series*

12-60



DIVISION OF STUDEBAKER-PACKARD CORPORATION  
MINNEAPOLIS 14, MINNESOTA

921-7

Price

A-G

Printed in U.S.A.



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# Important Safety Precautions

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Read and observe these safety precautions when using or working on electric generators, engines and related equipment. Also read and follow the literature provided with the equipment.

Proper operation and maintenance are critical to performance and safety. Electricity, fuel, exhaust, moving parts and batteries present hazards that can cause severe personal injury or death.

## FUEL, ENGINE OIL, AND FUMES ARE FLAMMABLE AND TOXIC

Fire, explosion, and personal injury can result from improper practices.

- Used engine oil, and benzene and lead, found in some gasoline, have been identified by government agencies as causing cancer or reproductive toxicity. When checking, draining or adding fuel or oil, do not ingest, breathe the fumes, or contact gasoline or used oil.
- Do not fill tanks with engine running. Do not smoke around the area. Wipe up oil or fuel spills. Do not leave rags in engine compartment or on equipment. Keep this and surrounding area clean.
- Inspect fuel system before each operation and periodically while running.
- Equip fuel supply with a positive fuel shutoff.
- Do not store or transport equipment with fuel in tank.
- Keep an ABC-rated fire extinguisher available near equipment and adjacent areas for use on all types of fires except alcohol.
- Unless provided with equipment or noted otherwise in installation manual, fuel lines must be copper or steel, secured, free of leaks and separated or shielded from electrical wiring.
- Use approved, non-conductive flexible fuel hose for fuel connections. Do not use copper tubing as a flexible connection. It will work-harden and break.

## EXHAUST GAS IS DEADLY

- Engine exhaust contains carbon monoxide (CO), an odorless, invisible, poisonous gas. Learn the symptoms of CO poisoning.
- Never sleep in a vessel, vehicle, or room with a genset or engine running unless the area is equipped with an operating CO detector with an audible alarm.
- Each time the engine or genset is started, or at least every day, thoroughly inspect the exhaust system. Shut down the unit and repair leaks immediately.

- Warning: Engine exhaust is known to the State of California to cause cancer, birth defects and other reproductive harm.

*Make sure exhaust is properly ventilated.*

- Vessel bilge must have an operating power exhaust.
- Vehicle exhaust system must extend beyond vehicle perimeter and not near windows, doors or vents.
- Do not use engine or genset cooling air to heat an area.
- Do not operate engine/genset in enclosed area without ample fresh air ventilation.
- Expel exhaust away from enclosed, sheltered, or occupied areas.
- Make sure exhaust system components are securely fastened and not warped.

## MOVING PARTS CAN CAUSE SEVERE PERSONAL INJURY OR DEATH

- Do not remove any guards or covers with the equipment running.
- Keep hands, clothing, hair, and jewelry away from moving parts.
- Before performing any maintenance, disconnect battery (negative [–] cable first) to prevent accidental starting.
- Make sure fasteners and joints are secure. Tighten supports and clamps, keep guards in position over fans, drive belts, etc.
- If adjustments must be made while equipment is running, use extreme caution around hot manifolds and moving parts, etc. Wear safety glasses and protective clothing.

## BATTERY GAS IS EXPLOSIVE

- Wear safety glasses and do not smoke while servicing batteries.
- Always disconnect battery negative (–) lead first and reconnect it last. Make sure you connect battery correctly. A direct short across battery terminals can cause an explosion. Do not smoke while servicing batteries. Hydrogen gas given off during charging is explosive.
- Do not disconnect or connect battery cables if fuel vapors are present. Ventilate the area thoroughly.

## **DO NOT OPERATE IN FLAMMABLE AND EXPLOSIVE ENVIRONMENTS**

Flammable vapor can be ignited by equipment operation or cause a diesel engine to overspeed and become difficult to stop, resulting in possible fire, explosion, severe personal injury and death. **Do not operate diesel equipment where a flammable vapor environment can be created by fuel spill, leak, etc., unless equipped with an automatic safety device to block the air intake and stop the engine.**

## **HOT COOLANT CAN CAUSE SEVERE PERSONAL INJURY**

- Hot coolant is under pressure. Do not loosen the coolant pressure cap while the engine is hot. Let the engine cool before opening the pressure cap.

## **ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH**

- Do not service control panel or engine with unit running. High voltages are present. Work that must be done while unit is running should be done only by qualified service personnel.
- Do not connect the generator set to the public utility or to any other electrical power system. Electrocution can occur at a remote site where line or equipment repairs are being made. An approved transfer switch must be used if more than one power source is connected.
- Disconnect starting battery (negative [-] cable first) before removing protective shields or touching electrical equipment. Use insulative mats placed on dry wood platforms. Do not wear jewelry, damp clothing or allow skin surface to be damp when handling electrical equipment.
- Use insulated tools. Do not tamper with interlocks.
- Follow all applicable state and local electrical codes. Have all electrical installations performed by a qualified licensed electrician. Tag open switches to avoid accidental closure.
- With transfer switches, keep cabinet closed and locked. Only authorized personnel should have cabinet or operational keys. Due to serious shock hazard from high voltages within cabinet, all service and adjustments must be performed by an electrician or authorized service representative.

If the cabinet must be opened for any reason:

1. Move genset operation switch or Stop/Auto/Handcrank switch (whichever applies) to Stop.
2. Disconnect genset batteries (negative [-] lead first).
3. Remove AC power to automatic transfer switch. If instructions require otherwise, use extreme caution due to shock hazard.

## **MEDIUM VOLTAGE GENERATOR SETS (601V TO 15kV)**

- Medium voltage acts differently than low voltage. Special equipment and training are required to work on or around medium voltage equipment. Operation and maintenance must be done only by persons trained and qualified to work on such devices. Improper use or procedures will result in severe personal injury or death.
- Do not work on energized equipment. Unauthorized personnel must not be permitted near energized equipment. Induced voltage remains even after equipment is disconnected from the power source. Plan maintenance with authorized personnel so equipment can be de-energized and safely grounded.

## **GENERAL SAFETY PRECAUTIONS**

- Do not work on equipment when mentally or physically fatigued or after consuming alcohol or drugs.
- Carefully follow all applicable local, state and federal codes.
- Never step on equipment (as when entering or leaving the engine compartment). It can stress and break unit components, possibly resulting in dangerous operating conditions from leaking fuel, leaking exhaust fumes, etc.
- Keep equipment and area clean. Oil, grease, dirt, or stowed gear can cause fire or damage equipment by restricting airflow.
- Equipment owners and operators are solely responsible for operating equipment safely. Contact your authorized Onan/Cummins dealer or distributor for more information.

**KEEP THIS DOCUMENT NEAR EQUIPMENT FOR EASY REFERENCE.**

HQ-4-A-F

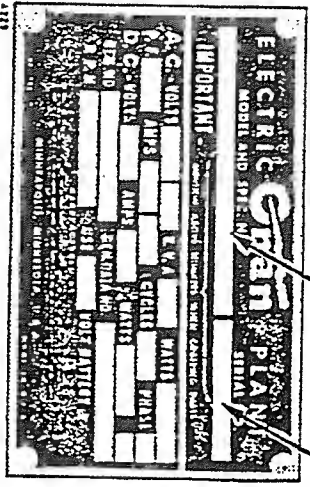
## INSTRUCTIONS FOR ORDERING REPAIR PARTS

FOR PARTS OR SERVICE, CONTACT THE DEALER FROM WHOM YOU PURCHASED THIS EQUIPMENT OR REFER TO YOUR NEAREST AUTHORIZED SERVICE STATION.

TO AVOID ERRORS OR DELAY IN FILLING YOUR PARTS ORDER, PLEASE FURNISH ALL INFORMATION REQUESTED.

REFER TO THE NAMEPLATE ON YOUR PLANT

1. Always give the MODEL & SPEC. NO. and SERIAL NO.



For handy reference, copy YOUR plant nameplate information in the spaces above.

- Do not order by reference number or group number, use part number and description.
- Give the part number, description and quantity needed of each item. If an old part cannot be identified, return the part prepaid to your dealer or nearest AUTHORIZED SERVICE STATION. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.
- State definite shipping instructions.

Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

\*Prices are purposely omitted from this Parts Catalog due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

For Current parts prices, consult your Onan Dealer, Distributor or Parts and Service Center.

\*En esta lista de partes los precios se omiten de propósito, ya que bastante confusión resulta de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extranjeros etc.

Consulte los precios vigentes de su distribuidor de productos "ONAN".

## ORIENTATION

This complete generating plant is powered by a Continental 4 cylinder engine. Always supply the MODEL, SPEC., and SERIAL NO. of the plant with each inquiry or parts order.

This catalog contains:

a. Pages 2 through 81. Illustrated main list.

Standard models use a automotive type starting motor (12 volt for Parts Key Nos. 1 through 5, and 6 volt for Parts Key No. 6). Parts for Standard models and several deviations from standard (models with options requested by the customer) are covered in the main list. If the plant in question is 6 or 12 volt cranked, select the desired parts from the main list.

b. Pages 82 through 96. Supplementary list for "Pennsylvania Approved" Plants.

For parts for Special "Pennsylvania Approved" plants refer FIRST to the Special Purpose Section near the rear of this catalog. These plants are all 36 volt exciter cranked. Parts NOT found in this supplementary list may be selected from the main list.

Parts in the Main Illustrated list apply to the 114 series generating plants as listed in the Plant Data Table. Parts are arranged in groups of related items. Some groups of optional equipment are included. Each illustrated part is identified by a reference number corresponding to the same reference number in the Parts List for the particular group. Parts illustrations represent typical items and do not necessarily portray a particular part number.

General changes by the manufacturer which resulted in a model spec letter advance, include the following for standard 6 or 12 volt cranked plants. (For 36 volt exciter cranked plants see Supplementary List).

- Spec "A" - Original design. Wico Magneto (12 Volt Cranked plants) and Fairbanks Morse Magneto (6 Volt Cranked plants).
- Spec "B" - Ignition on AC plants changed to Fairbanks Morse Magneto.
- Spec "C" - Generator changed from exciter armature on same shaft with alternator rotor to exciter armature on separate shaft and removable from alternator rotor.
- Spec "D" - On unboxed plants, voltmeter became standard equipment.
- Spec "E" - Circuit breaker changed from Westinghouse to Ithaca.
- Spec "F" - Ignition changed from Magneto to Battery. New governor with gear screw on shaft.
- Spec "G" - On AC plants only: Intake and Exhaust Manifold changed from DOWN exhaust to UP exhaust; New Style Housing, Controls, and Generator Adapter on both boxed and unboxed AC plants.

All part numbers in the list are ONAN numbers except those prefixed as follows:

- (CO) - Continental Motor Corps - Muskegon 82, Michigan.
- (AL) - Electric Auto-Lite Co. - Toledo 1, Ohio.
- (FBM) - Fairbanks Morse & Company - Chicago 5, Illinois.
- (WCE) - Wico Electric Company - West Springfield, Mass.
- (HOF) - Hood Products Company - Chicago 36, Illinois.
- (CAR) - Carter Carburetor Corp. - St. Louis 1, Mo.

Many of the prefixed numbered parts are stocked by ONANs and distributors, however these parts may be secured through the original manufacturer by the part number given in the parts list.

## PARTS CATALOG

### HQ SERIES

Compare your plant nameplate MODEL and SPEC NO. with the Plant Data Table. Select the Parts Key No. (1, 2, etc.) in the last column that applies to your plant Model and Spec No. This Parts Key No. appears in the description of parts that differ between basic models.

In certain instances it is necessary in the parts description to refer to additional description information such as the watt, cycles, etc. This information is available on the generator nameplate and should coincide with your model as listed in the Plant Data Table. Some parts descriptions refer to Spec A, B, etc. This refers to the LETTER at the end of the plant MODEL and SPEC NO. as shown on the nameplate. This Spec LETTER advances (A to B, B to C, etc.) with manufacturing changes.

UNLESS OTHERWISE MENTIONED IN THE PARTS DESCRIPTION, PARTS ARE INTERCHANGEABLE BETWEEN THE VARIOUS PARTS KEYS.

"Right" and "left" sides of the unit are identified by FACING the Radiator (FRONT) End.

### PLANT DATA TABLE

| MODEL & SPEC NO.†  | UNHOUSED   | WATER  | ELECTRICAL DATA  |                                  |                            |                            | PARTS KEY NO. |
|--|--|--|--|----------------------------------|----------------------------|----------------------------|---------------|
|  |  |  | *VOLTS   | CYCLES                           | PHASE                      | WIRE                       |               |
| 10HQ-1H/<br>10HQ-3H/<br>10HQ-53H/<br>12HQ-82H/<br>15HQ-1H/<br>15HQ-3H/ | 10HQ-1R8/<br>10HQ-3R8/<br>10HQ-63R8/<br>12HQ-82R8/<br>15HQ-1R8/<br>15HQ-3R8/ | 10,000<br>10,000<br>10,000<br>12,500<br>15,000<br>15,000 | 120<br>120/240<br>120/240<br>120/240<br>120<br>120/240 | 60<br>60<br>60<br>60<br>60<br>60 | 1<br>1<br>1<br>1<br>1<br>1 | 2<br>3<br>3<br>3<br>3<br>2 | 1.            |
| 10HQ-4R/<br>10HQ-54R/<br>12HQ-54H/<br>15HQ-4H/                         | 10HQ-4R8/<br>10HQ-54R8/<br>12HQ-54R8/<br>15HQ-4R8/                           | 10,000<br>10,000<br>12,500<br>15,000                     | 120/208<br>120/208<br>120/208<br>120/208               | 60<br>60<br>60<br>60             | 3<br>3<br>3<br>3           | 4<br>4<br>4<br>4           | 2.            |
| 10HQ-5DR/<br>10HQ-55DR/<br>12HQ-55DR/<br>15HQ-5DR/                     | 10HQ-5DR8/<br>10HQ-55DR8/<br>12HQ-55DR8/<br>15HQ-5DR8/                       | 10,000<br>10,000<br>12,500<br>15,000                     | 120/240.<br>120/240.<br>120/240.<br>120/240.           | 60<br>60<br>60<br>60             | 3<br>3<br>3<br>3           | 4<br>4<br>4<br>4           | 3.            |
| 10HQ-6R/<br>10HQ-56R/<br>12HQ-56H/<br>15HQ-6R/                         | 10HQ-6R8/<br>10HQ-56R8/<br>12HQ-56R8/<br>15HQ-6R8/                           | 10,000<br>10,000<br>12,500<br>15,000                     | 480<br>480<br>480<br>480                               | 60<br>60<br>60<br>60             | 3<br>3<br>3<br>3           | 4<br>4<br>4<br>4           | 4.            |
| 10HQ-7H/<br>10HQ-57H/<br>12HQ-57H/<br>15HQ-7H/                         | 10HQ-7R8/<br>10HQ-57R8/<br>12HQ-57R8/<br>15HQ-7R8/                           | 10,000<br>10,000<br>12,500<br>15,000                     | 220/280<br>220/280<br>220/280<br>220/280               | 60<br>60<br>60<br>60             | 2<br>2<br>2<br>2           | 4<br>4<br>4<br>4           | 5.            |
| 10HQ-160H/<br>15HQ-150H/   | -  | 10,000<br>15,000   | 250<br>250   | DC<br>DC                         | -<br>-                     | -<br>-                     | 6.            |

\* - Reference to 120, 120/240 and 480 volt also applies to 116, 116/220 and 460 volt.

† - This is a delta-wound 240 volt model with one phase center-tapped. A limited amount of terminal current exceeds the rated capacity when 3 phase power is used as no terminal current exceeds the rated capacity.

‡ - The number after the diagonal line (/) signifies standard or optional features. The LETTER ending the model and spec. no. is the Spec Letter and advances with manufacturing changes (A to B, B to C, etc.).

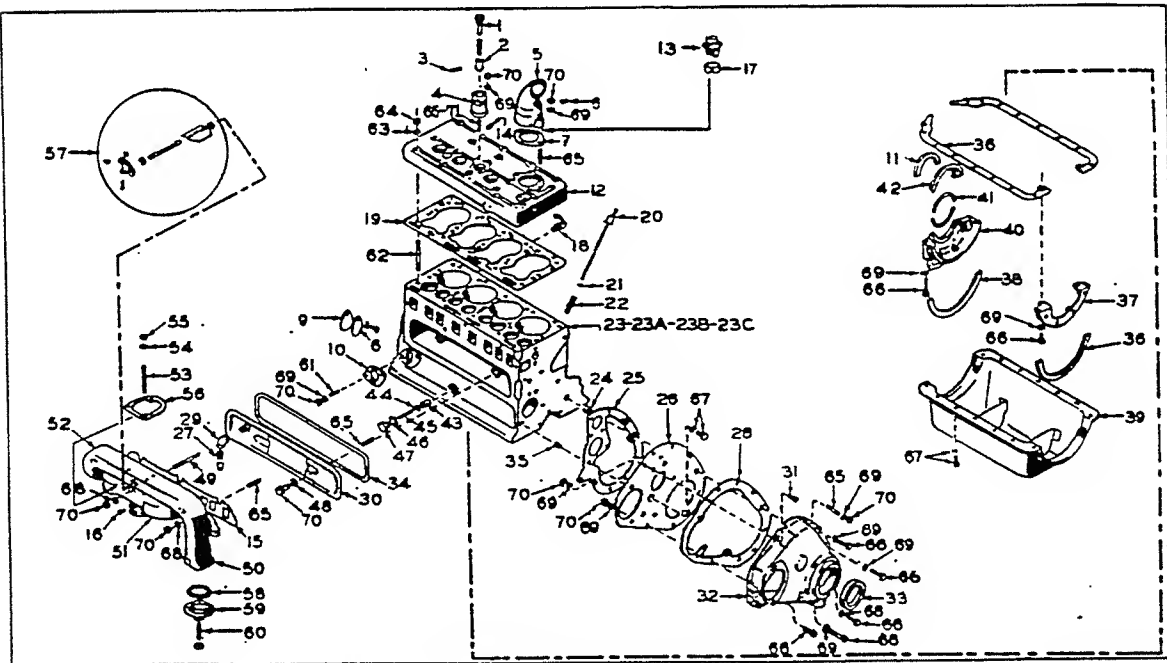


FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW

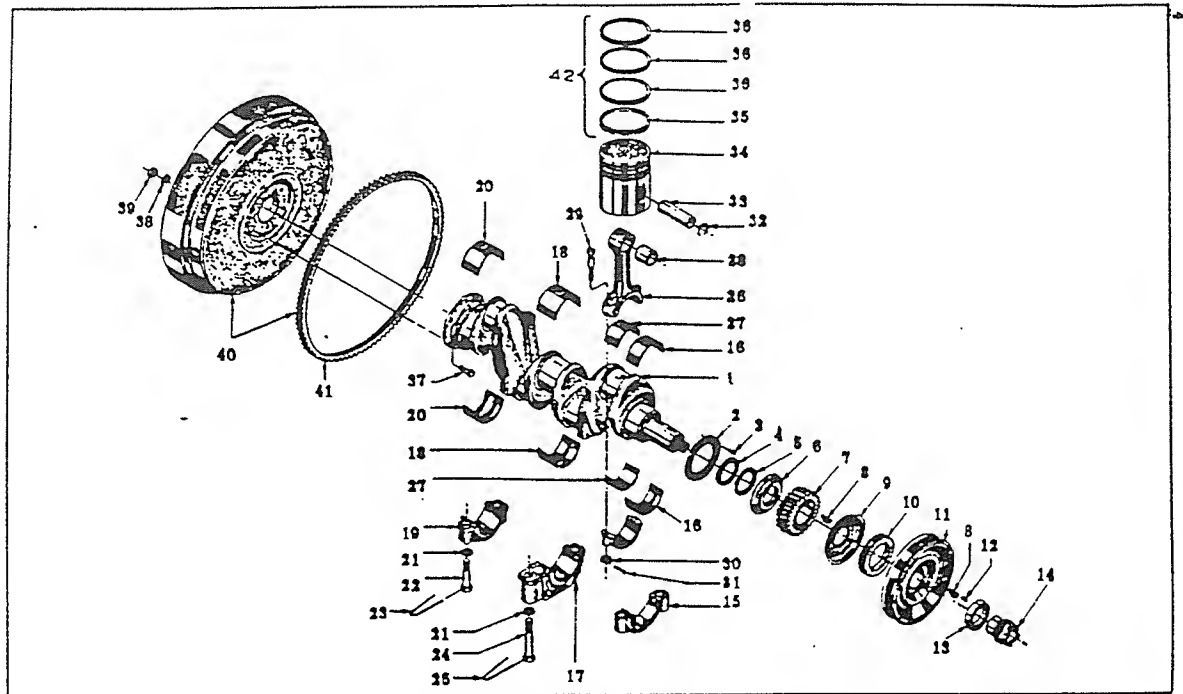


FIG. 2 - ENGINE PARTS GROUP - INTERNAL VIEW

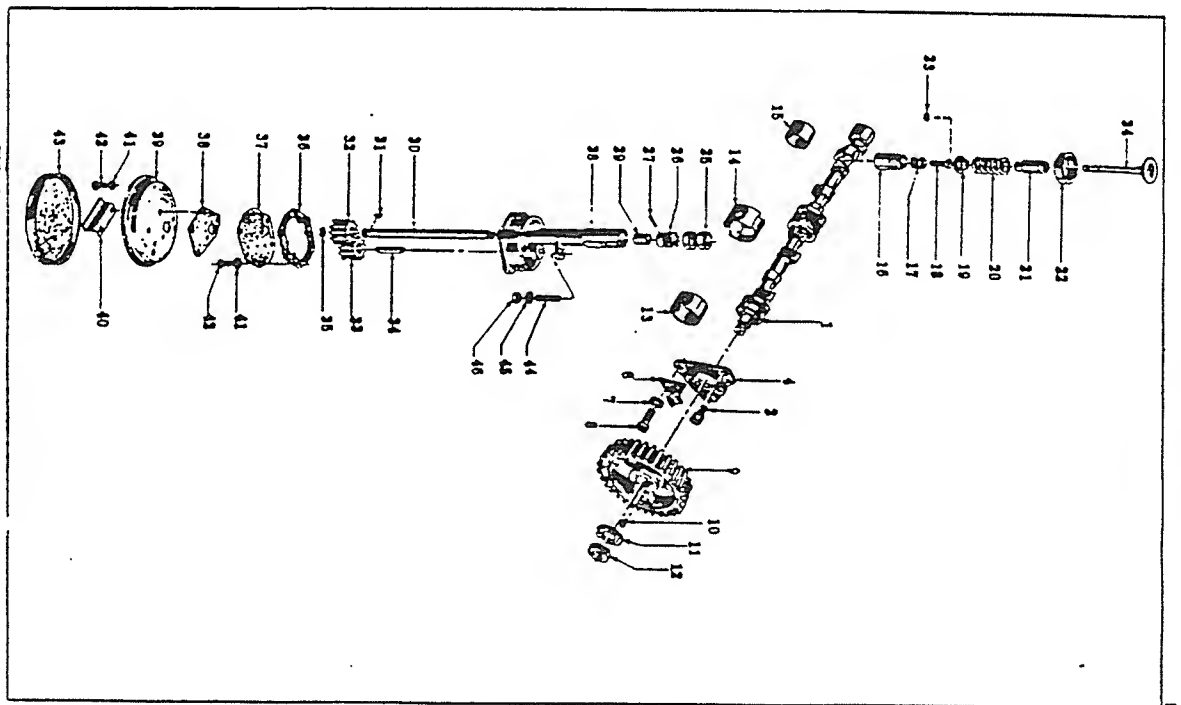


FIG. 3 - CAMSHAFT AND OIL PUMP PARTS GROUP

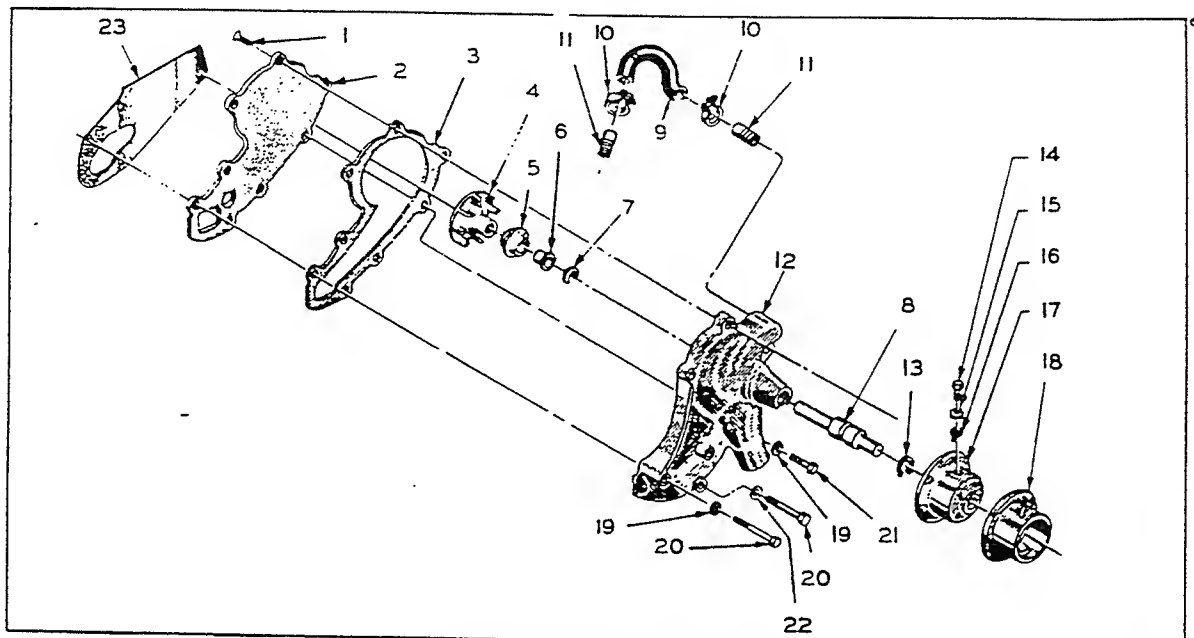


FIG. 4 - WATER PUMP PARTS GROUP

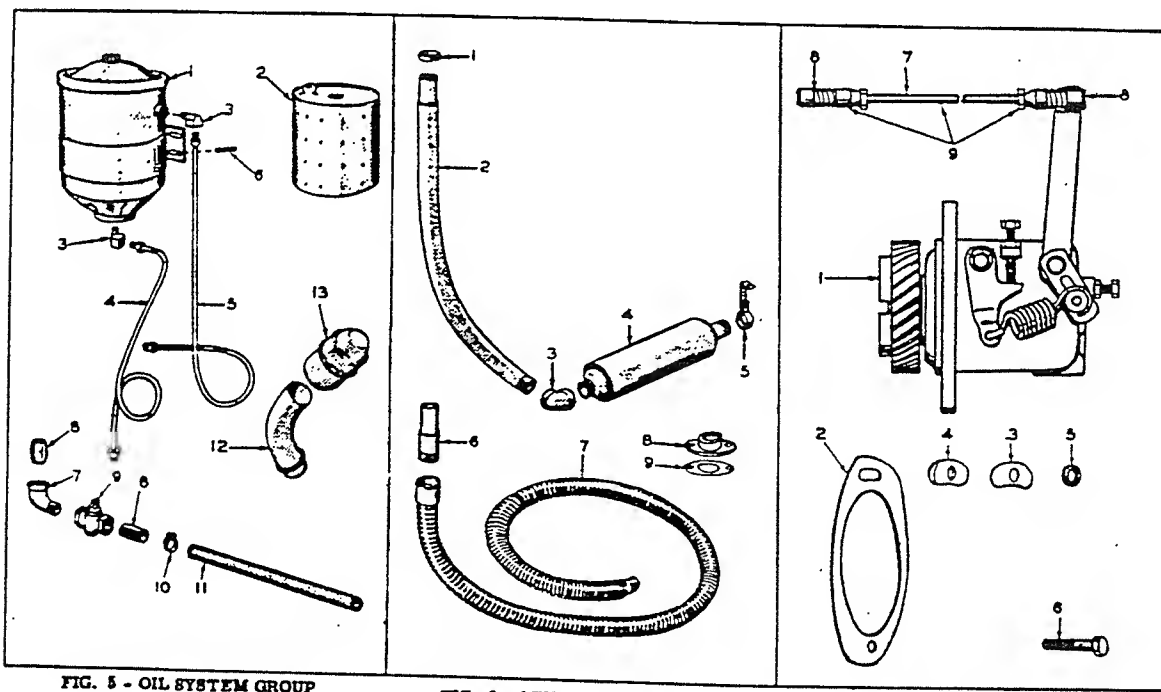
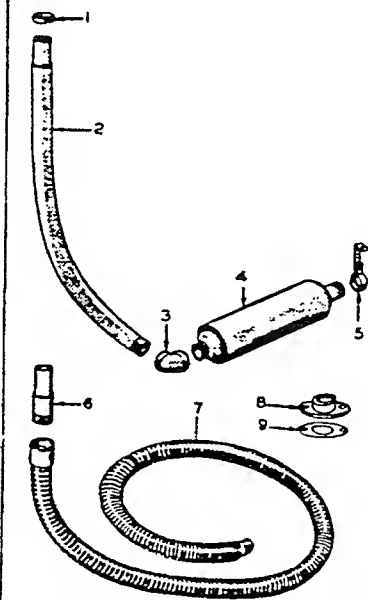


FIG. 5 - OIL SYSTEM GROUP



**FIG. 8 - MUFFLER GROUP**

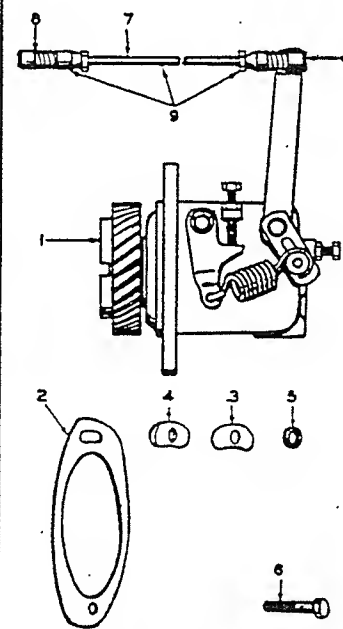


FIG. 7 - GOVERNOR  
AND GOVERNOR LINKAGE GROUP



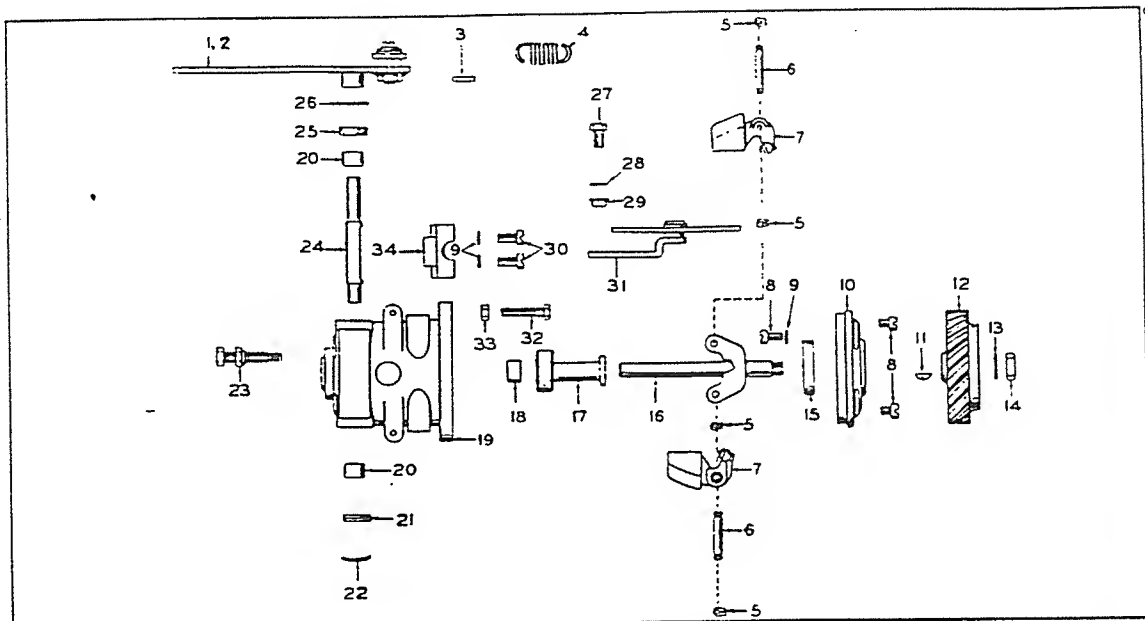


FIG. 8 - GOVERNOR PARTS GROUP - PLANTS PRIOR TO SPEC E

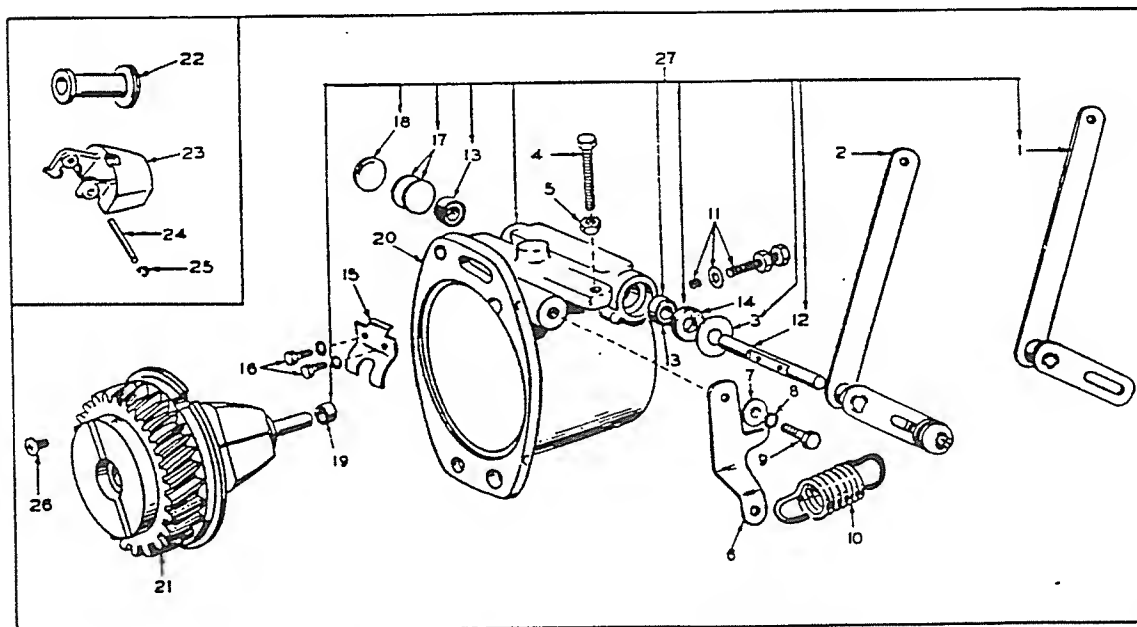


FIG. 8A - GOVERNOR PARTS GROUP - PLANTS BEGIN SPEC E

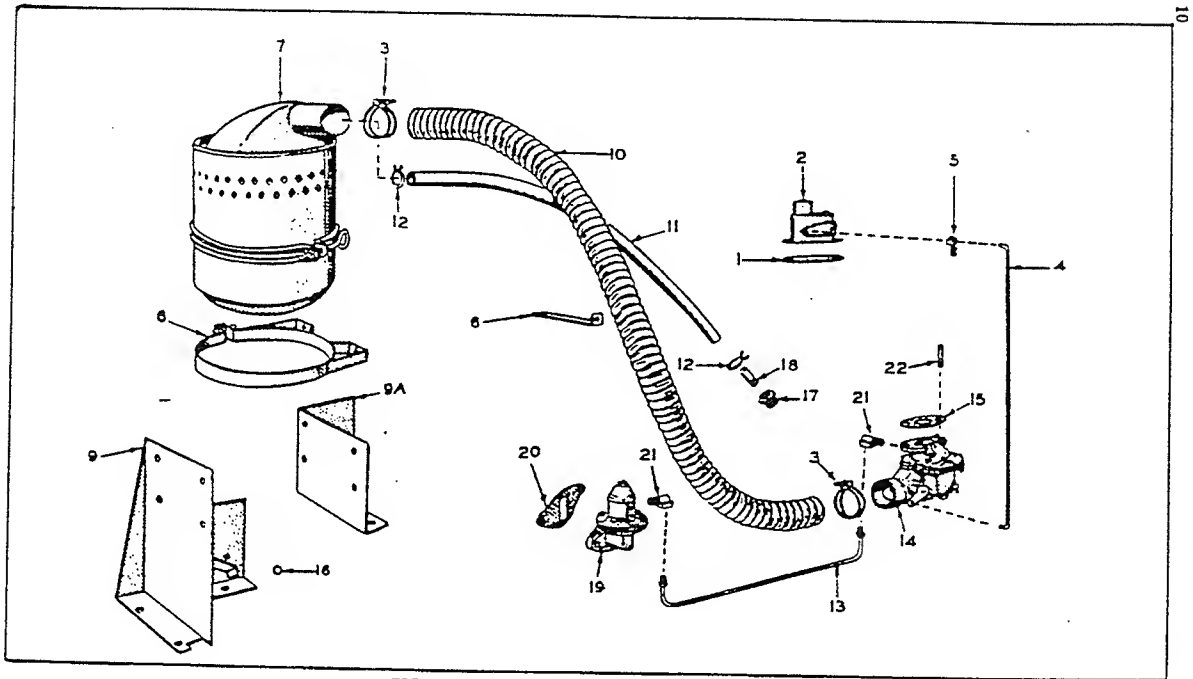


FIG. 9 - FUEL SYSTEM GROUP - GASOLINE

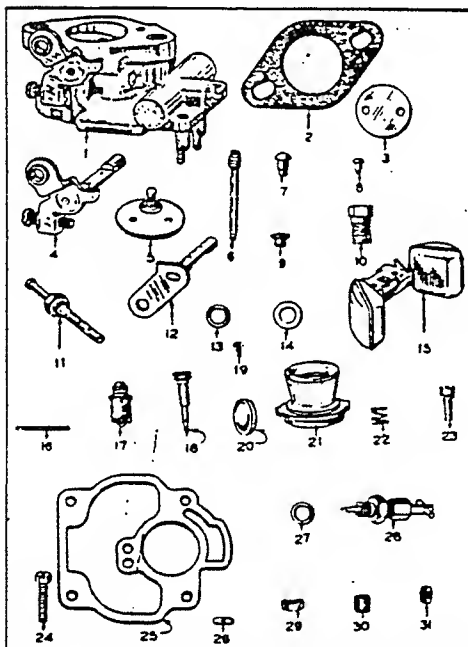


FIG. 10 - CARBURETOR PARTS GROUP - GASOLINE

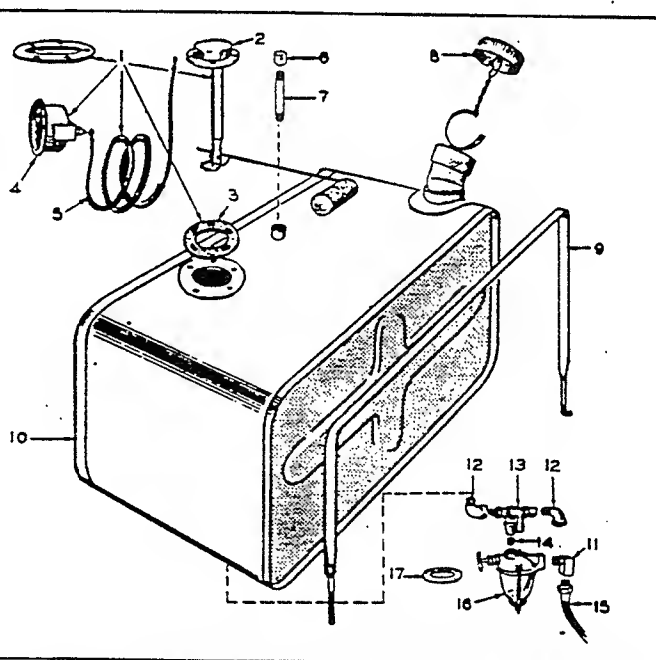


FIG. 11 - MOUNTED FUEL TANK GROUP - HOUSED PLANTS ONLY  
(OPTIONAL EQUIPMENT)



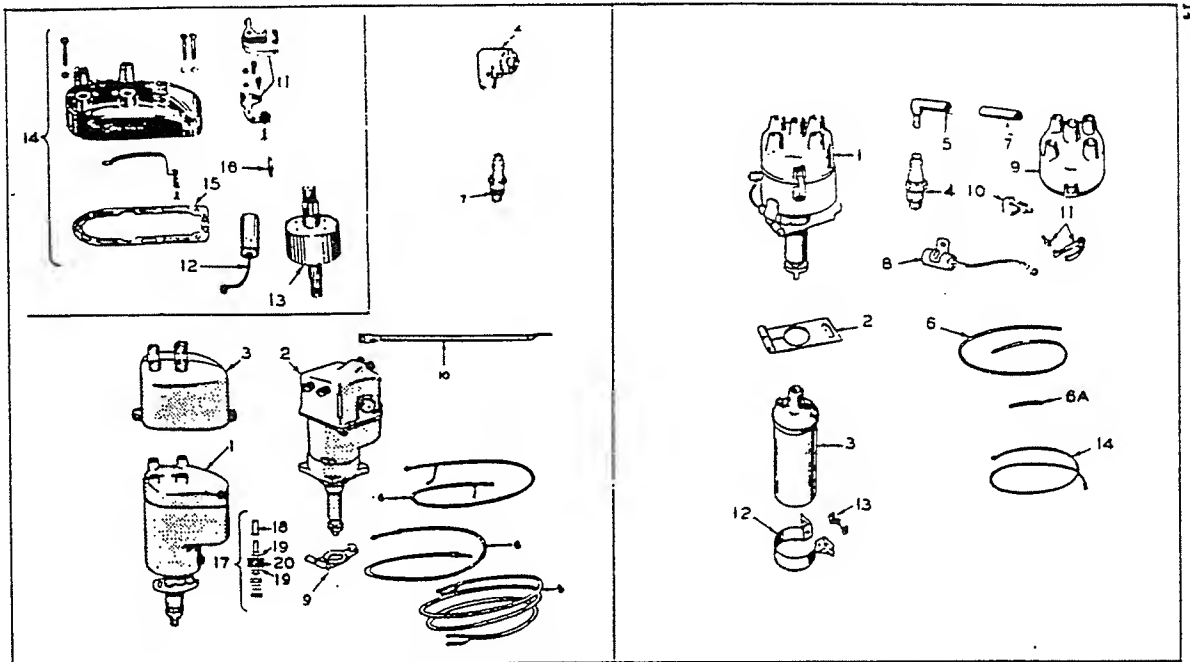


FIG. 14 - MAGNETO IGNITION GROUP (PRIOR TO SPEC E)

FIG. 15 - BATTERY IGNITION GROUP (BEGIN SPEC E)

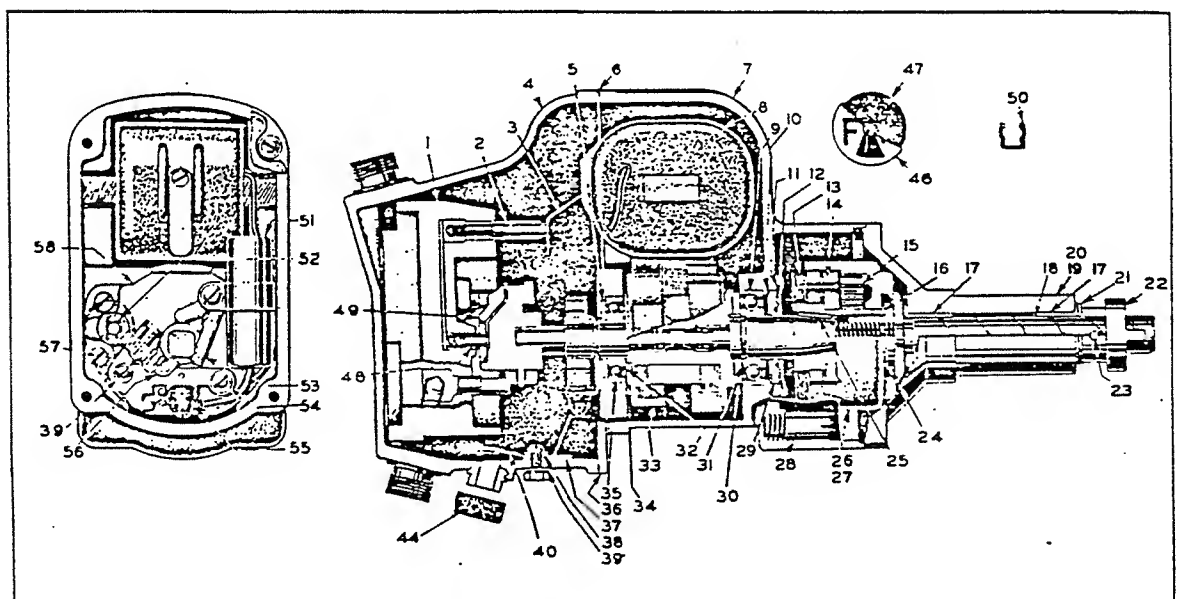
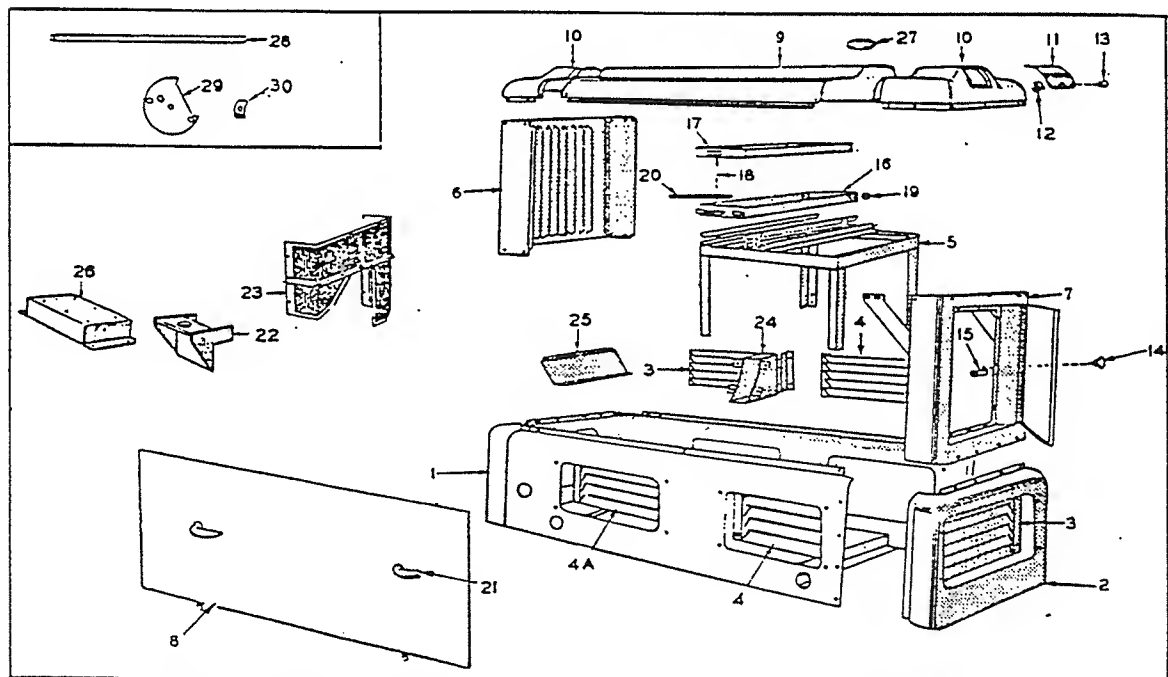
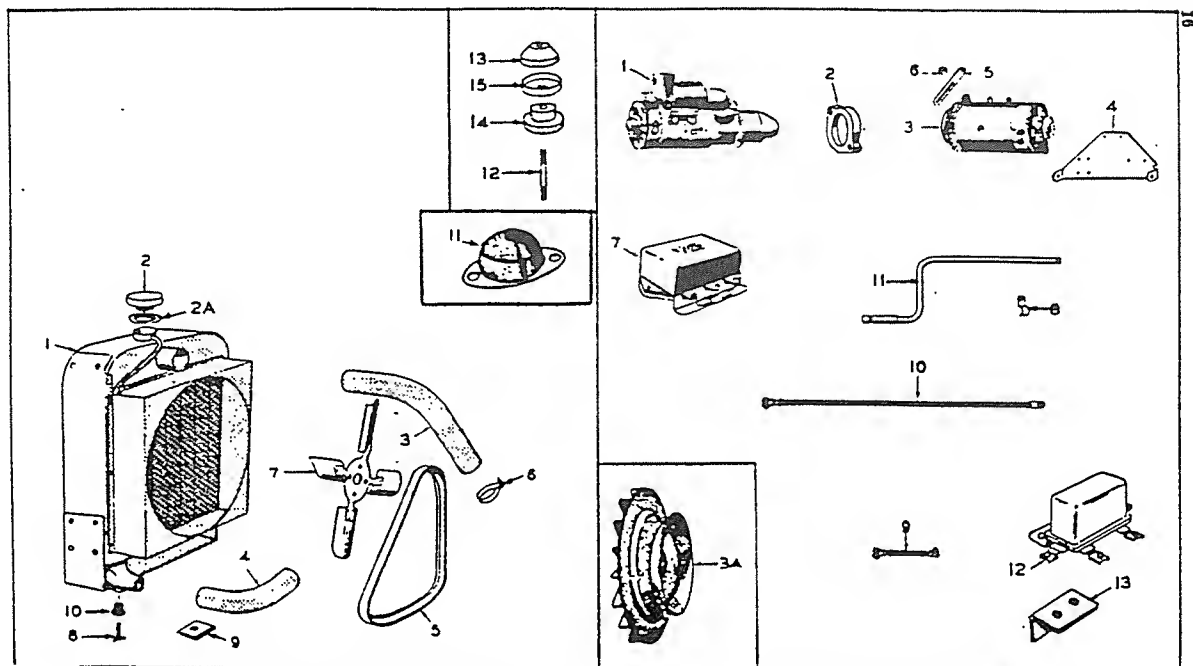


FIG. 16 - FAIRBANKS MORSE MAGNETO PARTS GROUP



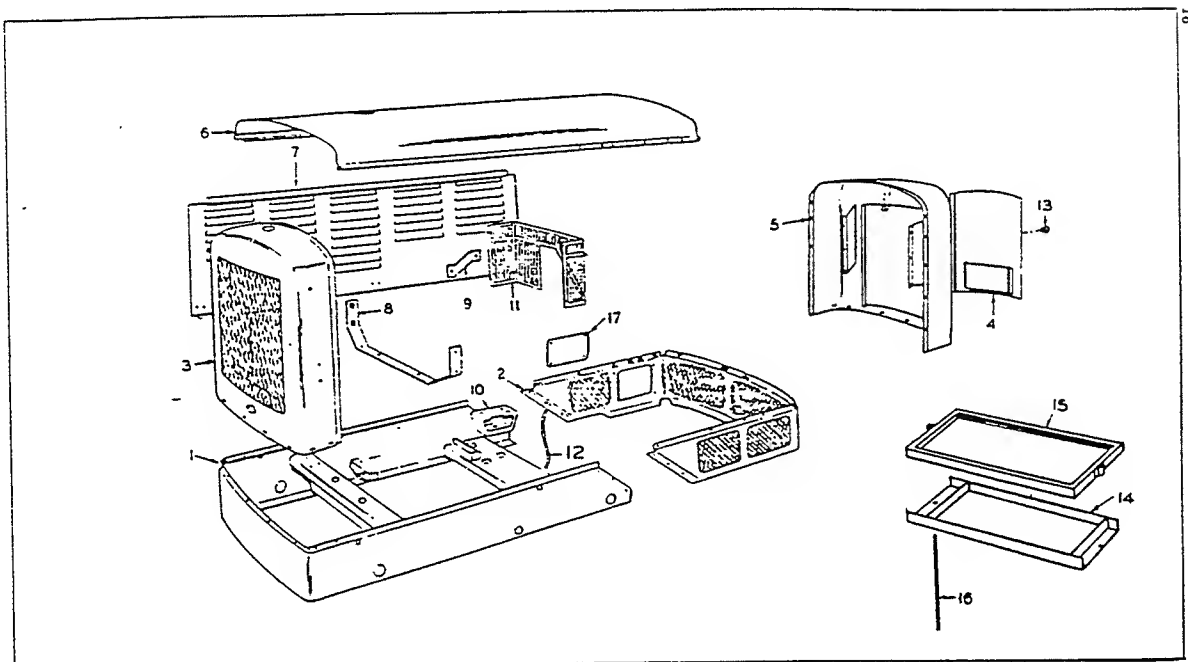


FIG. 19A - HOUSING GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)

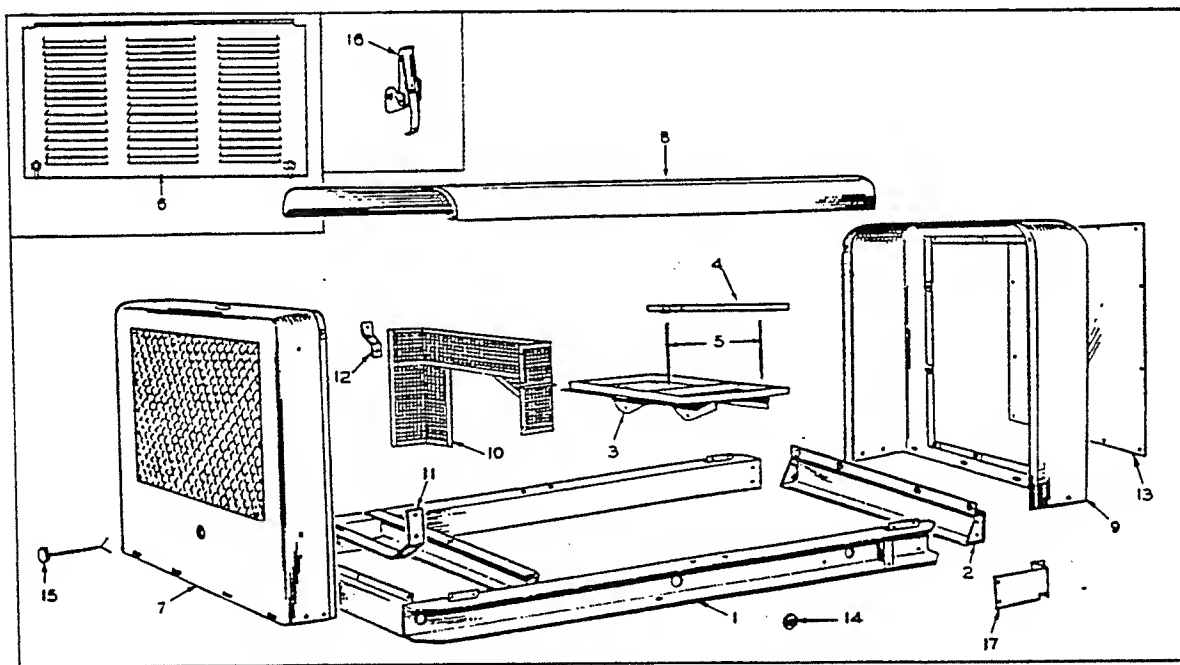


FIG. 19B - HOUSING GROUP - DC MAGNET USE PLANTS (PARTS KEY NO. 6)

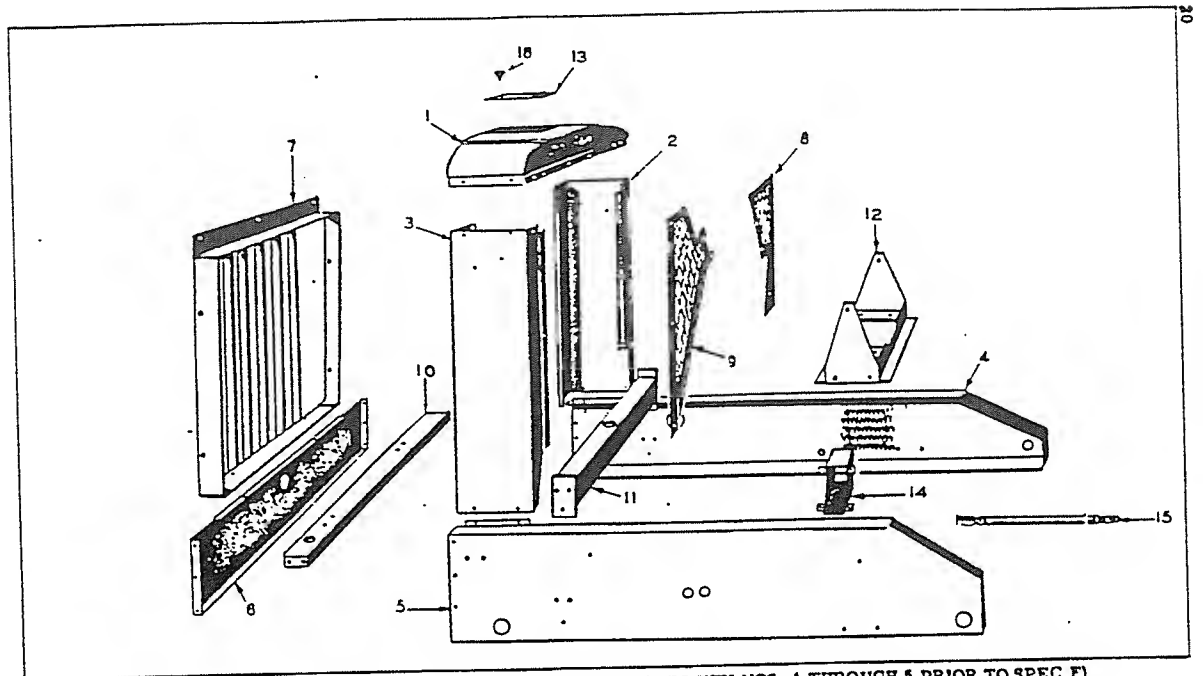


FIG. 20 - MOUNTING GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F)

305 D68 Cover  
305 B67 Bracket

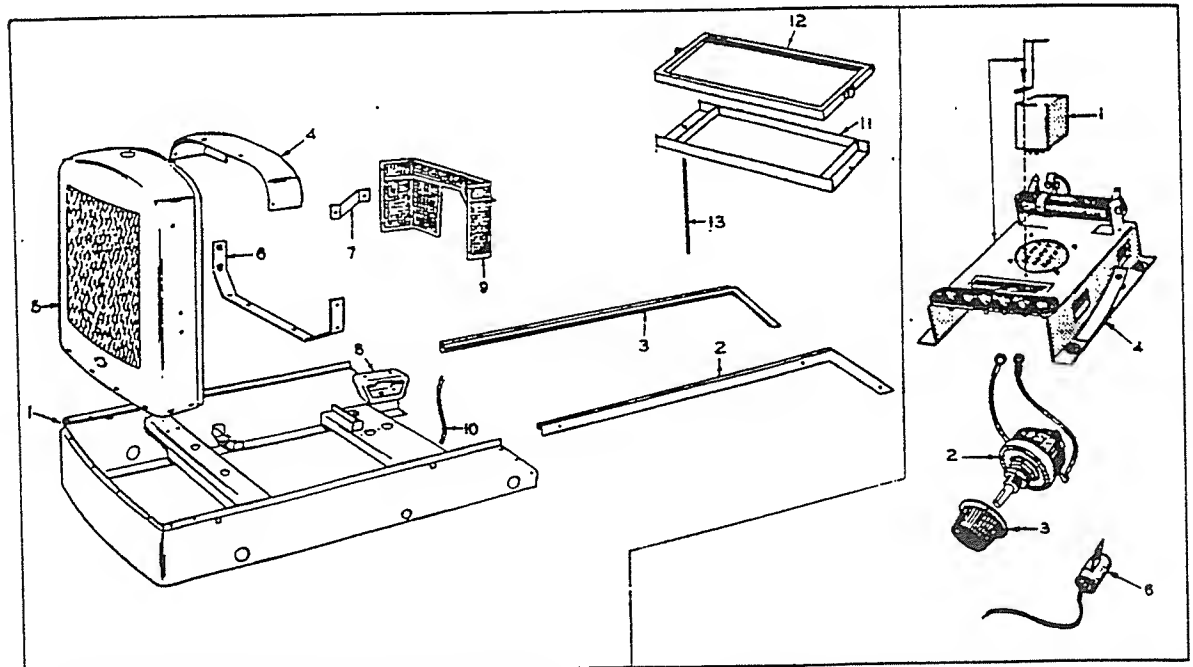


FIG. 20A - MOUNTING GROUP - UNHOUSED AC PLANTS  
(PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)

FIG. 21 - VOLTAGE REGULATOR GROUP -  
(12 VOLT CRANKED PLANTS)-(PARTS KEY NOS. 1 through 5)

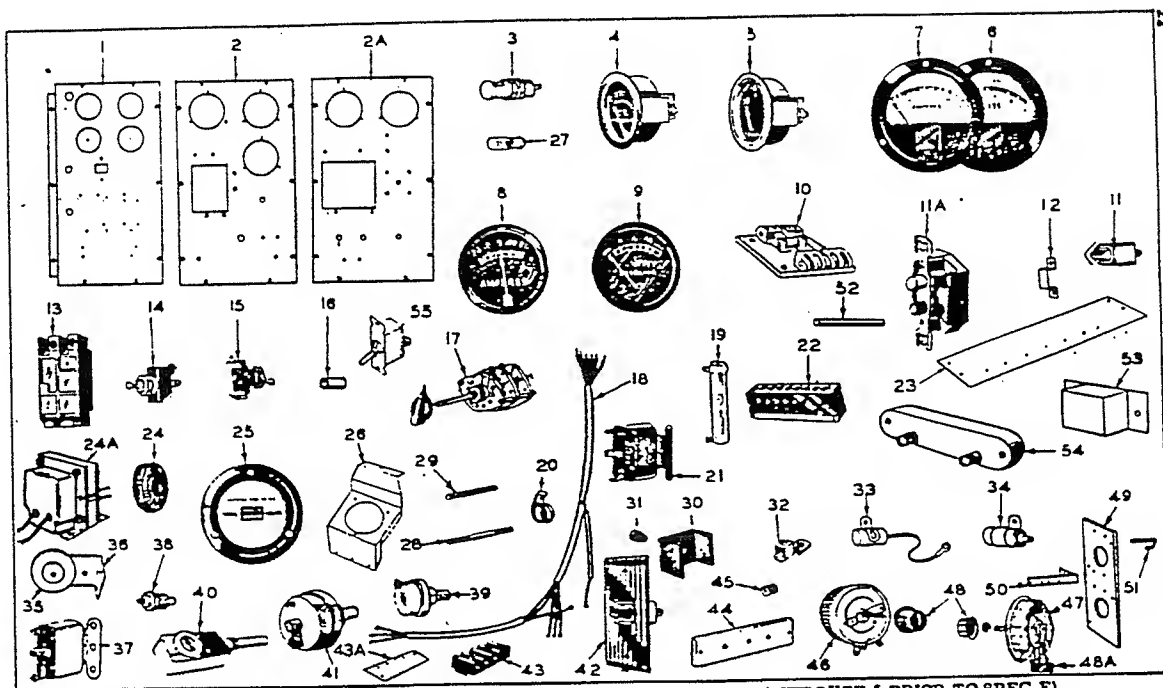


FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F)

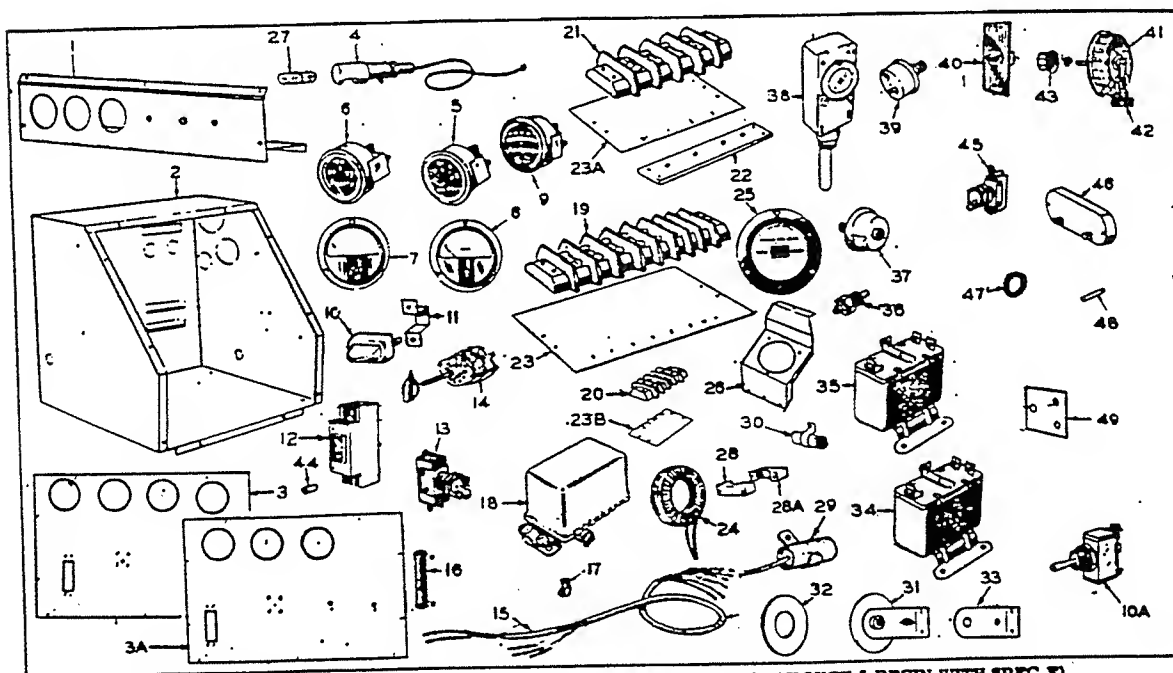


FIG. 22A - CONTROL GROUP - HOUSED PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)



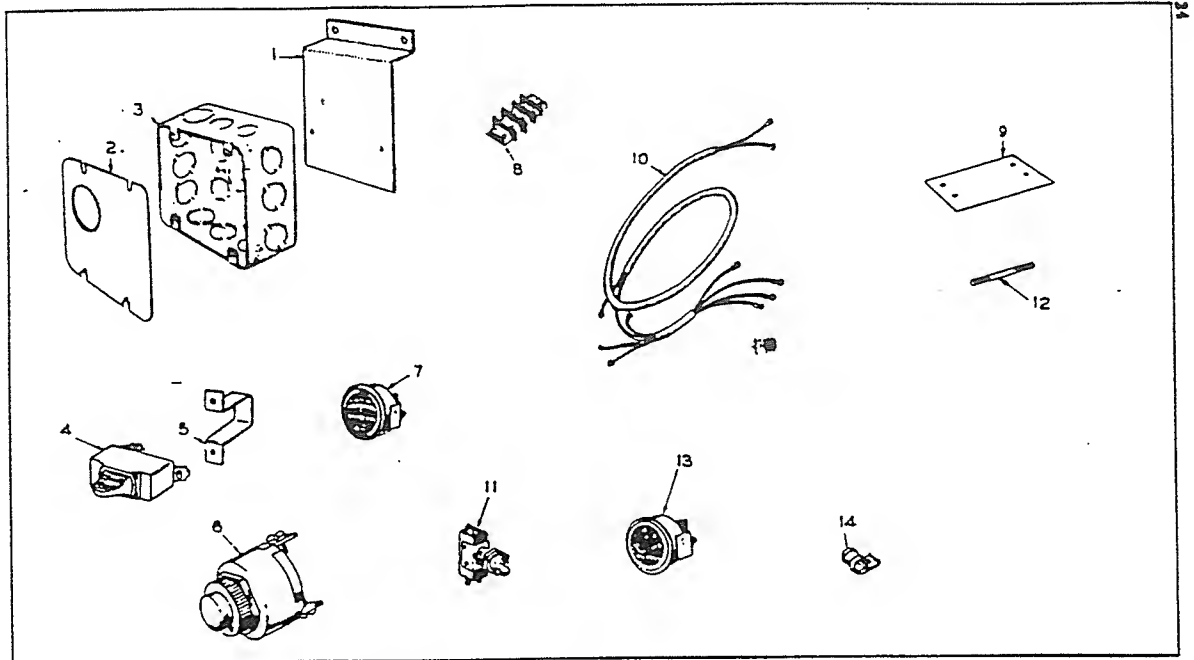


FIG. 22B - CONTROL GROUP - DC MAGNET PLANT - PARTS KEY NO. 6

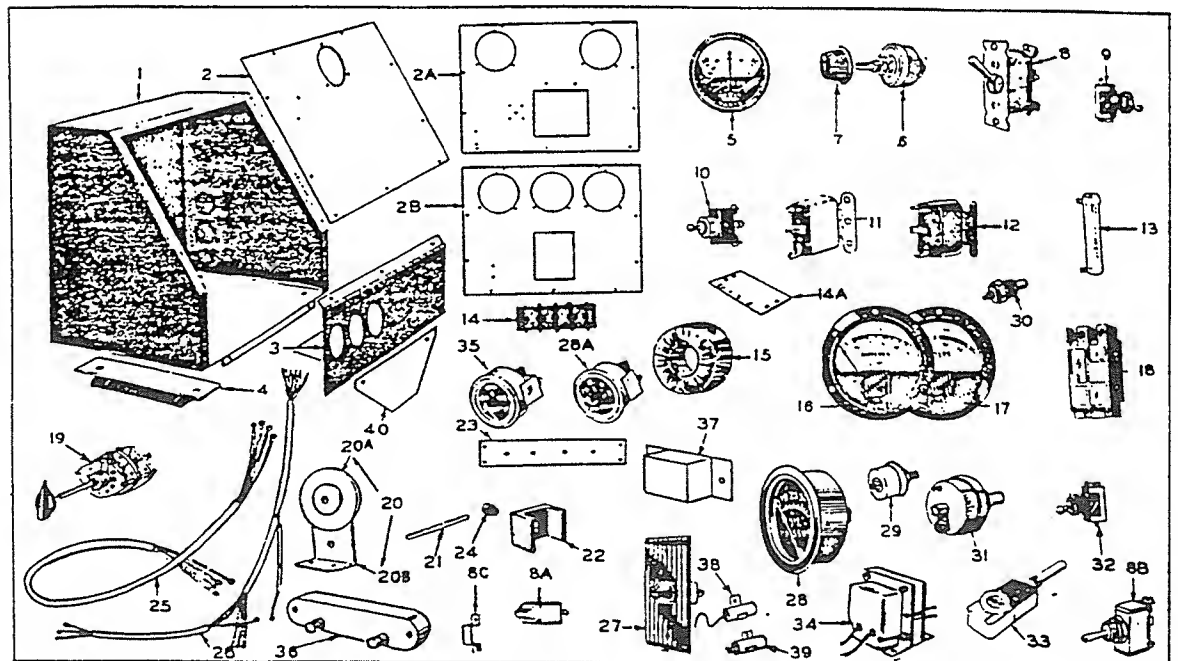


FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5)

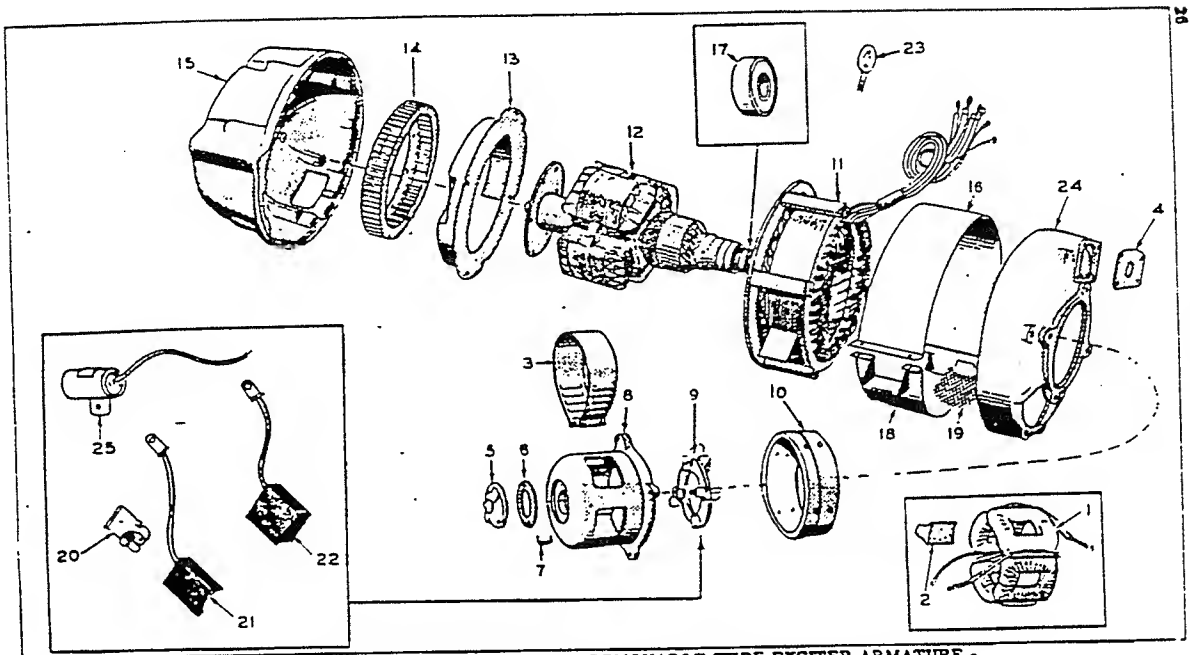


FIG. 24 - GENERATOR GROUP - NOT REMOVABLE TYPE EXCITER ARMATURE -  
(FOR PARTS KEYS 1 through 5, PRIOR TO SPEC C)

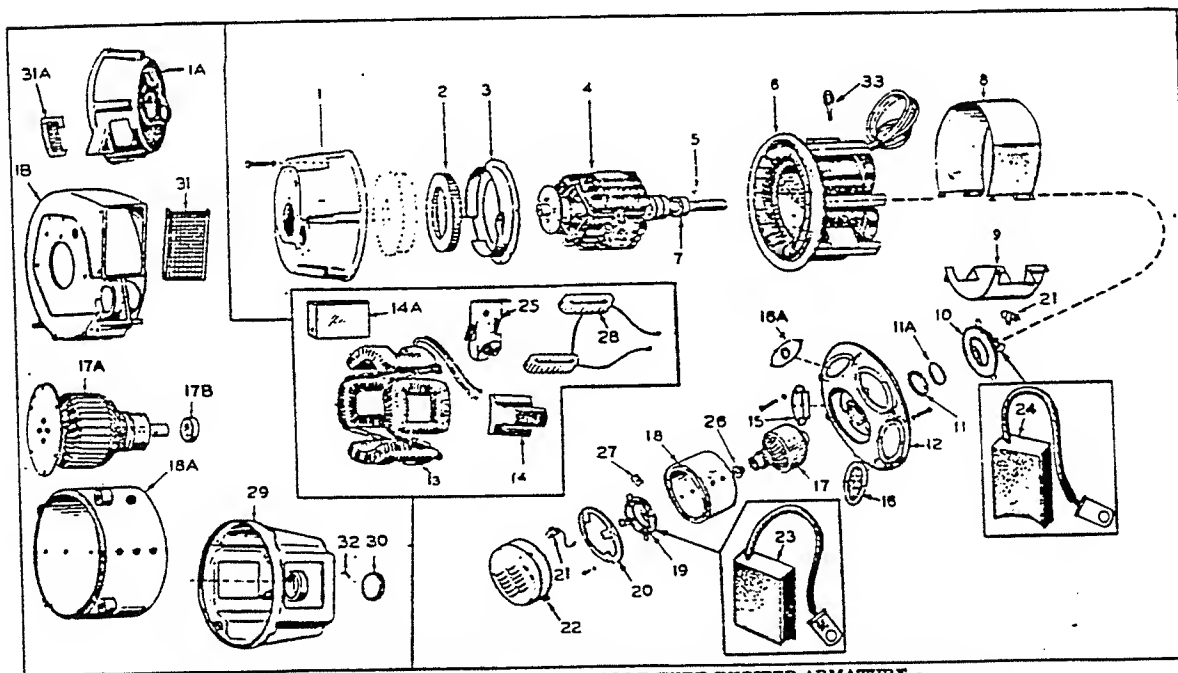


FIG. 25 - GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE -  
(FOR PARTS KEY NOS. 1 through 5 BEGIN SPEC C, and FOR PARTS KEY NO. 6 in ALL SPECS)

## OVERSIZE AND UNDERSIZE PARTS

If an oversize or undersize part is required, specify the size after the part number and separated with a dash. Example: F162A-230-.003(Oversize)

Sizes other than standard are offered as follows:

NOTE: Only standard size and those sizes below which are marked with an asterisk (\*) are stocked by ONAN. Whenever practicable order other sizes directly from your nearest Continental Motors Corp. dealer.

## OVERSIZE PISTONS

| Cast Iron            | Aluminum |
|----------------------|----------|
| .010 *               | .010     |
| .020 *               | .020     |
| .030 *               | .030     |
| .040                 | .040     |
| .050                 |          |
| .060                 |          |
| S.F. (Semi-Finished) | S.F.     |

## OVERSIZE PISTON RINGS

.010 \*  
.020 \*  
.030 \*  
.040  
.060

## OVERSIZE PISTON PINS

.003 \*  
.005  
.010

## UNDERSIZE BEARINGS (MAIN &amp; ROD)

.002 \*  
.010  
.020 \*  
.030  
.040  
.060 (may be reworked to .040)

## OVERSIZE GEARS

Identification Mark on Gear

.001 (1)  
.002 (2)  
.003 (3)  
.004 (4)  
.005 (5)  
.006 (6)

## UNDERSIZE GEARS

Identification Mark on Gear

.001 (1)  
.002 (2)  
.003 (3)  
.004 (4)  
.005 (5)  
.006 (6)

185-500

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW

## Engine, Reolacement - General Description:

Includes - Complete Block, Valve Cover, Cylinder Head, Oil Pan, Thermostat, Water Pump, Fan Hub, Flywheel, Manifold.

Excludes - Radiator, Air Cleaner, Fan Blades, Flywheel Housing, Fuel Pump, Governor, Ignition Wiring, Magneto, Distributor, Spark Plugs, Charge Generator and Regulator, Carburetor, Fan Belt, Oil Filter, Oil Fill Neck, Starting Motor.

Plants Prior to Socc "F" -

Parts Key Nos. 1 through 5 (Continental Type F-162 Spec 966).

Parts Key No. 6 (Continental Type F-162 Spec 966 with Manifold Assembly #F162E-502).

Plants Begin with Spec "F" (Continental Type F-162 Spec 1377).

Shaft Assembly, Magneto Drive.

Coupling, Drive - Magneto Drive Shaft.

Pin, Magneto Drive Coupling.

Adapter, Magneto.

Elbow, Outlet - Cylinder Water.

Plug, Pipe - Cylinder Water Outlet Elbow -

1/2".

3/8".

Gasket, Cylinder Water Outlet Elbow.

Cover, Timing Hole (CO)F400C-206.

Felt, Timing Hole Cover.

Gasket, Fuel Pump Mounting.

Felt, Rear Bearing Oil Guard - 1/2" thick (To be secured with shellac or equal).

Head Assembly, Cylinder - Includes Studs and Plug -

Standard Compression.

High Compression (For use with gaseous fuel only).

Thermostat, Coolant Water.

Plug, Pipe - 1/2" - Countersunk.

Gasket, Exhaust and Intake Manifold to Cylinder.

Plug, Pipe - 1/8" Sq. Head - Exhaust Manifold (CO)X-100.

Ring, Thermostat Adapter.

|          |                |   |
|----------|----------------|---|
|          | 100P124        | 1 |
|          | 100A165        | 1 |
|          | 100P235        | 1 |
| 185-807  | (CO)F600M-2160 | 1 |
| 2        | (CO)PYM-201    | 1 |
| 3        | (CO)X-1735     | 1 |
| 4        | (CO)F162M-271  | 1 |
| 5        | (CO)F225K-337  | 1 |
| 6        |                |   |
|          | (CO)X-101-B    | 1 |
|          | (CO)X-110      | 1 |
| 185-7477 | (CO)C400K-215  | 1 |
| 8        | 232-255        | 1 |
| 185-607  | (CO)F400C-206  | 1 |
| 10       | 149A126        | 1 |
| 11       | (CO)F400B-251  | 1 |
| 12       |                |   |
|          | (CO)F140A-310  | 1 |
|          | 110A813        | 1 |
| 13       | (CO)F225K-318  | 1 |
| 14       | (CO)X-101-B    | 1 |
| 185-638  | (CO)F400E-303  | 1 |
| 16       | 505-57         | 1 |
| 185-750  | (CO)F218K-202  | 1 |

| REF. NO.  | PART NO.          | QUANT. USED | DESCRIPTION   |
|---|-------------------|-------------|---|
| FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW (Cont.) |                   |             |   |
| 18  | (CO)X-1005        | 1           | Cock, Drain - Cylinder Water.   |
| 115-513 19  | (CO)F400A-338     | 1           | Gasket, Cylinder Head.  |
| 20  | (CO)D600L-3000    | 1           | Rod Assembly, Oil Gauge.  |
| 21  | 509-29            | 1           | Felt, Oil Gauge Rod Cover.  |
| 22  | (CO)Y400L-268     | 1           | Support, Oil Gauge Rod.   |
| 23  |                   |             | Cylinder and Crankcase Assembly - Includes Cylinder and Crankcase, Bearings, Bushings, Guides, Inserts, Support, Guard, Screws, Studs, Plugs and Pins -   |
|   | (CO)F400A-42119-A | 1           | Prior to Spec "F".  |
|   | (CO)F400A-42170-A | 1           | Begin with Spec "F".  |
| 23A   |                   |             | Cylinder and Crankcase Assembly - Includes Ref. 23 plus Pistons and Rings.  |
|   | (CO)F400A-42119-C | 1           | Prior to Spec "F".  |
|   | (CO)F400A-42170-C | 1           | Begin with Spec "F".  |
| 23B   |                   |             | Cylinder and Crankcase Assembly - Includes Ref. 23A plus Valves, Springs, Locks, Retainers, and Tappet Assembly -   |
|   | (CO)F400A-42119-I | 1           | Prior to Spec "F".  |
|   | (CO)F400A-42170-I | 1           | Begin with Spec "F".  |
| 23C   | (CO)F400A-42170-8 | 1           | Cylinder and Crankcase Assembly - Includes Ref. 23B plus Connecting Rods, Crankshaft, Camshaft, Front End Plate, Gears, Filler Blocks, Cylinder Head, Gaskets, Gear Cover Assy., Oil Pump Assembly, Oil Pan Assembly, Studs, Nuts, Screws, Washers, Plug and Lock Wires - |
|   |                   |             | Begin with Spec "F" only.   |
| 24  | (CO)8TC-200       | 1           | Dowel, Ring - Gear Cover to Crankcase.  |
| 185-581 25  | (CO)F400B-225     | 1           | Gasket, End Plate to Cylinder.  |
| 26  | (CO)F400B-322     | 1           | Plate, Crankcase End.   |
| 27  | (CO)P39A-221      | 1           | Tube, Vent - Valve Chamber Cover.   |
| 185-585 28  | (CO)F400B-320     | 1           | Gasket, Gear Cover to End Plate.  |
| 29  | (CO)X-12150       | 1           | Elbow, Vent Tube - Valve Chamber Cover.   |
| 30  | (CO)F400A-2410    | 1           | Cover Assembly, Valve Chamber.  |
| 31  | (CO)D600B-221     | 1           | Screw, Dowel - Gear Cover to End Plate.   |
| 32  | (CO)F400B-4142    | 1           | Cover Assembly, Gear - Includes Seal.   |
| 185-84233 33  | (CO)X-1555        | 1           | Seal, Oil - Crankshaft Bearing - Front - Replaces (CO)A600L-202.  |
| 185-50434 34  | (CO)F124A-201     | 1           | Gasket, Valve Chamber Cover.  |

| REF. NO.  | PART NO.       | QUANT. USED | DESCRIPTION   |
|---|----------------|-------------|---|
| FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW (Cont.) |                |             |   |
| 35  | (CO)D600B-203  | 1           | Dowel, Ring - End Plate to Crankcase.   |
| 115-586 36  | (CO)F400B-442  | 2           | Gasket, Oil Pan.  |
| 37  | (CO)D600B-340  | 1           | Block, Front Filler.  |
| 185-584 38  | (CO)F400B-255  | 2           | Cork, Front or Rear Filler Block to Crankcase - Replaces (CO)D600B-214.                           |
| 39  | (CO)F400B-4580 | 1           | Pan, Oil.   |
| 40  | (CO)D600B-406  | 1           | Block, Rear Filler.   |
| 185-583 41  | (CO)F400B-252  | 2           | Seal, Oil - Rear Bearing Filler Block (Felt against neoprene - install with felt towards rear).   |
| 42  | (CO)D600B-305  | 1           | Guard, Oil - Crankshaft Rear Bearing.   |
| 185-800 43  | (CO)15SL-211   | 1           | Valve, Relief - Oil Pressure.   |
| 44  | 528-8          | As Req.     | Washer, Adjusting - Oil Pressure Relief Valve (CO)W5L-213.  |
| 185-838 45  | (CO)F400L-219  | 1           | Spring, Oil Pressure Relief Valve - Replaces (CO)F400L-223.                                       |
| 46  | (CO)X-365      | 1           | Gasket, Oil Pressure Relief Valve Plug.   |
| 185-802 47  | (CO)M1AL-200   | 1           | Plug, Oil Pressure Relief Valve.  |
| 185-831 48  | (CO)X-334      | 2           | Gasket, Valve Chamber Cover Nut.  |
| 49  |                |             | Stud -  |
|   | (CO)X-19897    | 1           | Manifold to Cylinder (3/8-16 x 5-1/2") Prior to Spec "F" on Plants with Down Exhaust Manifold.    |
|   | (CO)X-4258     | 1           | Intake and Exhaust Manifold to Cylinder (3/8-16 x 3-5/8") Use on Plants with Up Exhaust Manifold. |
| 60  |                |             | Manifold Assembly, Intake and Exhaust -   |
|   |                |             | Prior to Spec "F" -   |
| 185-640   | (CO)F400E-3041 | 1           | For Parts Key Nos. 1 through 5 (Down Exhaust).  |
| 185-635   | (CO)F162E-502  | 1           | For Parts Key No. 6 (Up Exhaust).   |
|   | (CO)F162E-502  | 1           | Begin With Spec "F" (Up Exhaust).   |
| 51  | (CO)F162F-416  | 1           | *Manifold, Intake.  |
| 52  | (CO)F400E-304  | 1           | *Manifold, Exhaust.   |
| 53  | (CO)X-19019    | 3           | *Stud, Exhaust to Intake Manifold (3/8-16 x 3-15/16").  |
| 185-855 54  | 854-20         | 3           | *Washer, Lock - Exhaust to Intake Manifold (CO)X-297.   |
| 55  | (CO)X-18278    | 3           | *Nut, Exhaust to Intake Manifold (3/8-16).  |
| 56  | (CO)F400E-205  | 1           | *Gasket, Exhaust to Intake Manifold.  |

\*-These parts used only on plants with Parts Key Nos. 1 through 5 Prior to Spec F. (Down Exhaust)

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PARTS LIST

PARTS LIST

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| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW (Cont.)

|         |                 |    |   |
|---------|-----------------|----|---|
| 57      |                 | 1  | *Control Assembly, Heat - Not Sold as a Assembly - Includes indented components not individually illustrated. |
|         | (CO)C400E-218   | 1  | *Thermostat, Heat Control - BI-Metal.   |
|         | (CO)C400E-212   | 1  | *Key, Heater Valve.   |
|         | (CO)C400E-219   | 1  | *Washer, Heat Control Thermostat Shield.  |
|         | (CO)C400E-216   | 1  | *Counterweight, Heat Control Valve.   |
|         | (CO)X-3009      | 1  | *Screw, Heat Control Counterweight Clamp (10-32 x 3/4").  |
|         | (CO)X-1896      | 1  | *Nut, Heat Control Counterweight Clamp Screw (#10-32).  |
|         | (CO)F600E-208   | 1  | *Valve, Exhaust Manifold Heater (Requires welding to assembly).   |
|         | (CO)F400E-206   | 1  | *Shaft, Exhaust Manifold Heater Valve (Requires welding to assembly).   |
|         | (CO)F600G-200   | 1  | *Bushing, Heater Control Valve (Requires welding to assembly).  |
|         | (CO)F400E-210   | 1  | *Screw, Stop - Heater Control Valve.  |
|         | (CO)C400E-217   | 1  | *Cover, Exhaust Manifold Thermostat.  |
|         | (CO)F400E-207   | 1  | *Spacer, Exhaust Manifold Thermostat Cover.   |
|         | (CO)X-17019     | 1  | *Pin, Heat Control Cover Stop (3/16 x 3/8").  |
|         | (CO)X-3055      | 1  | *Screw, Heat Control Cover to Manifold (1/4-20 x 1").   |
|         | (CO)X-201       | 1  | *Washer, Lock - Heat Control Cover Screw.   |
| 195-634 | (CO)C600E-202   | 1  | *Gasket, Exhaust Pipe Packing.  |
| 195-633 | (CO)C600E-200   | 1  | *Flange, Packing - Exhaust Pipe.  |
| 60      | (CO)X-4288      | 2  | *Stud, Exhaust Outlet Packing Flange (3/8-18 x 2-1/8").   |
| 195-843 | (CO)X-1952      | 2  | Stud, Fuel Pump Mounting (5/16-18 x 1-1/4").  |
| 62      | (CO)X-19828     | 14 | Stud, Cylinder Head to Cylinder - 3-1/2" Long.  |
| 63      | (CO)3X-X-1408   | 15 | Washer, Plain (14) Cylinder Head Stud, (1) Distributor Adapter Stud.  |
| 64      | (CO)3X-X-1803-E | 15 | Nut, Cylinder Head (7/16-20).   |
| 65      |                 |    | Stud -  |
|         | (CO)X-19837     | 2  | Water Outlet Elbow (5/16-18 x 2-1/8").  |
|         | (CO)X-19004-C   | 1  | Magneto Adapter to Cylinder Head (3/8-16 x 1-1/2").   |
| 195-849 | (CO)X-4200      | 8  | (2) Gear Cover to Cylinder - Upper Holes, (8) Intake & Exhaust Manifold to Cylinder (3/8-16 x 1-11/16").      |
|         | (CO)X-4038      | 2  | Valve Chamber Cover (1/4-20 x 1-3/8").  |

\*-These parts used only on plants with Parts Key Nos. 1 through 5 Prior to Spec F. (Down Exhaust)

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW (Cont.)

|         |              |    |  |
|---------|--------------|----|--|
| 66      |              |    | Screw -  |
|         | (CO)X-3941   | 2  | Front End Plate to Gear Cover (3/8-16 x 7/8).  |
|         | (CO)X-3295   | 3  | (1) Gear Cover to Cylinder, (1) Gear Cover to Filler Block, (1) Gear Cover to End Plate (3/8-16 x 1-1/8").                                   |
|         | (CO)X-3368   | 1  | Gear Cover to Crankcase (at ring dowel) 7/16-14 x 1-1/2".  |
|         | (CO)X-3299   | 3  | Gear Cover to Filler Block (3/8-16 x 2").  |
|         | (CO)X-2958   | 2  | Rear Filler Block to Crankcase (5/16-18 x 2-5/8").   |
|         | 800-27       | 2  | Front Filler Block to Crankcase (CO)X-3924 (5/16-18 x 7/8").   |
| 67      | (CO)X-3896   | 15 | Screw & Washer - (1) Front End Plate to Cylinder, (14) Oil Pan (5/16-18 x 3/4").   |
| 68      |              |    | Washer -   |
|         | (CO)X-14134  | 2  | Gear Cover to Filler Block (Upper) Copper (3/8").  |
|         | 526-26       | 3  | Manifold to Cylinder - Plain - 3/8" (CO)UB-110.  |
|         | (CO)X-14141  | 4  | Manifold to Cylinder (13/32").   |
| 69      |              |    | Washer, Lock -   |
|         | 850-51       | 8  | (1) Magneto Adapter to Head, (2) Front End Plate to Gear Cover, (3) Gear Cover to Cylinder, (2) Gear Cover to Filler Block - 3/8" (CO)X-203. |
|         | 850-45       | 4  | (2) Outlet Elbow, (2) Fuel Pump Mounting - 5/16" (CO)X-202.  |
|         | 850-50       | 7  | (1) Gear Cover to End Plate, (2) Gear Cover to Crankcase, (4) Front & Rear Filler Block to Crankcase - 3/8" (CO)X-270.                       |
| 70      |              |    | Nut -  |
|         | (CO)X-1802-G | 4  | (1) Magneto Adapter to Head, (2) Gear Cover to Cylinder, (1) Gear Cover to End Plate (3/8-16).   |
|         | (CO)X-1803-H | 1  | Gear Cover to End Plate (7/16-14).   |
|         | (CO)X-18327  | 1  | Valve Chamber Cover.   |
|         | 870-48       | 4  | (2) Outlet Elbow, (2) Fuel Pump Mounting - 5/16-18 (CO)X-1801-E.   |
| 195-855 | (CO)X-18278  | 7  | Manifold to Cylinder (3/8-16).   |
|         | (CO)X-4349   | 1  | Stud, Distributor Adapter - 4" Long.   |
|         | (CO)X-2693   | 2  | Screw, Dowel - Flywheel Housing to Crankcase (7/16-14 x 1-1/2").   |
|         |              |    | Plug, Hubbard -  |
|         | 517-28       | 1  | Camshaft Bushing (Rear) 1-1/2" (CO)X-2236.   |
|         | (CO)X-2207   | 1  | Cylinder Core Hole - 1-1/8".   |
|         | (CO)X-2202   | 2  | Cylinder Core Hole - 1-3/8".   |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 1 - ENGINE PARTS GROUP - EXTERNAL VIEW (Cont.)

|         |            |   |   |
|---------|------------|---|---|
|         | 800-4      | 2 | Screw, Filler Block to Flywheel Housing - (CO)X-3058.           |
|         | (CO)X-201  | 2 | Washer, Lock - Filler Block to Flywheel Housing.                |
|         | (CO)X-3115 | 1 | *Screw, Intake Manifold Plug.                                   |
| 185-939 | (CO)X-366  | 1 | *Gasket, Intake Manifold Plug Screw.                            |
|         | (CO)X-101  | 1 | *Plug, Pipe - Intake Manifold (Ext. Head - 1/4").               |
|         | (CO)X-100  | 1 | Plug, Pipe - Intake Manifold (Ext. Head - 1/8") Begin Spec "F". |

\* - These parts used only on Plants with Parts Key Nos. 1 through 5 prior to Spec F. (Down Exhaust).

FIG. 2 - ENGINE PARTS GROUP - INTERNAL VIEW

|           |    |                |         |  |
|-----------|----|----------------|---------|--|
|           | 1  | (CO)F400C-5000 | 1       | Crankshaft - Replaces (CO)F400C-357.   |
| 185-6062  |    | (CO)D800C-204  | 2       | Washer, Thrust - Crankshaft.   |
| 185-6983  |    | (CO)6TG-101    | 3       | Pin, Crankshaft Thrust Washer to Crankcase - 5/32 x 1/2".                                  |
| 185-6234  |    | (CO)10EC-204   | As Req. | Shim, Thrust - Crankshaft (.002").   |
| 185-624   | 5  | (CO)10EC-205   | As Req. | Shim, Thrust - Crankshaft (.008").   |
|           | 6  | (CO)F600C-205  | 1       | Plate, Thrust - Crankshaft.  |
|           | 7  | (CO)D600H-300  | 1       | *Gear, Timing - Crankshaft.  |
|           | 8  | 515-124        | 2       | Key, Crankshaft Gear (CO)X-511.  |
|           | 9  | (CO)A600C-204  | 1       | Thrower, Oil - Crankshaft.   |
| 185-74230 |    | (CO)X-1555     | 1       | Seal, Fan Drive Pulley - Replaces (CO)D600K-232.   |
|           | 11 | (CO)F140K-302  | 1       | Pulley, Fan Drive (On Crankshaft).   |
| 185-74    | 12 | (CO)C400K-217  | 1       | Plug, Keyway - Fan Drive Pulley.   |
|           | 13 | (CO)F600-O-205 | 1       | Washer, Crankshaft Starting Jaw to Crankshaft - Replaces (CO)8UO-202.                      |
|           | 14 | (CO)F600-O-208 | 1       | Jaw, Starting - Replaces (CO)D600-O-201.   |
|           | 15 | (CO)F400B-348  | 1       | Cap, Bearing - Front.  |
| 185-73    | 16 | (CO)F800T-227  | 1       | *Kit, Crankshaft Front Bearing - Upper & Lower - Includes Washer & Bearing (CO)F600G-3491. |
|           | 17 | (CO)F400B-350  | 1       | Cap, Bearing - Center.   |
| 185-654   | 18 | (CO)F400G-3111 | 1       | *Bearing, Crankshaft - Center Upper and Lower.   |

\* - Refer to, Available Oversize and Undersize Parts Chart.

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 2 - ENGINE PARTS GROUP - INTERNAL VIEW (Cont.)

|         |    |                  |    |  |
|---------|----|------------------|----|--|
| 185-667 | 19 | (CO)F400B-349    | 1  | Cap, Bearing - Rear.   |
|         | 20 | (CO)F600G-3471   | 1  | *Bearing, Crankshaft - Rear Upper and Lower.                                       |
|         | 21 | (CO)3X-B2B-110   | 8  | Washer, Plain - 1/2" - Cr. Bearing Cap to Cylinder.                                |
|         | 22 | (CO)X-2986       | 4  | Screw, Crankshaft Bearing Cap - Front and Rear - 1/2-13 x 2-1/2".                  |
|         | 23 | (CO)X-1333-B     | 2  | Wire, Lock - No. 19 x 10 - Replaces (CO)6SH-100.                                   |
|         | 24 | (CO)X-3511       | 2  | Screw, Crankshaft Bearing Cap - Center - 1/2-13 x 3-1/4".                          |
|         | 25 | (CO)X-1333-B     | 1  | Wire, Lock - No. 19 x 12.  |
|         | 26 | (CO)F400D-5021   | 2  | Rod and Cap Assembly (Including Bearings, Bushings, Bolts and Nuts, Cylinder 1-3). |
|         | 27 | (CO)F400D-3031   | 2  | Rod and Cap Assembly (Including Bearings, Bushings, Bolts and Nuts, Cylinder 2-4). |
| 185-659 | 27 | (CO)F600G-341    | 4  | *Bearing (1-3 Connecting Rods) - Included in F400T-155 Kit.                        |
| 185-660 | 27 | (CO)F600G-342    | 4  | *Bearing (2-4 Connecting Rods) - Included in F400T-159 Kit.                        |
|         | 28 | (CO)F400G-211    | 4  | *Bushings, Piston Pin.   |
|         | 29 | (CO)C600D-206    | 8  | Bolts, Connecting Rod.   |
|         | 30 | (CO)X-18188      | 8  | Nut, Connecting Rod Bolt - 3/8-24.   |
|         | 31 | (CO)X-601        | 8  | Pin, Cotter - Connecting Rod Bolt - 3/32 x 3/4".                                   |
| 185-511 |    | (CO)F162A-4101-E | 4  | *Piston and Pin Assembly.  |
|         | 32 | (CO)X-7011       | 8  | Ring, Piston Pin Retaining.  |
| 185-52  | 33 | (CO)11EA-200     | 4  | *Pin, Piston.  |
|         | 34 |                  | 4  | Piston Only - Less Pin - Order Piston and Pin Assembly.                            |
|         | 35 | (CO)F162A-302    | 4  | *Ring, Piston - Bottom Groove.   |
| 185-500 | 36 | (CO)A800A-333    | 12 | *Ring, Piston - First, Second and Third Grooves.                                   |
| 185-605 | 37 | (CO)C400C-206    | 6  | Bolt, Flywheel to Crankshaft.  |
|         | 38 | 854-20           | 8  | Washer, Lock - 3/8" - Flywheel - (CO)X-297.  |
|         | 39 | 104A91           | 6  | Nut - 3/8-24 - Flywheel Mounting - (CO)X-18237.                                    |
|         | 40 | (CO)F162C-3210   | 1  | Flywheel and Ring Gear.  |
| 185-620 | 41 | (CO)8FC-304      | 1  | Gear, Ring.  |
|         | 42 | 113-73           | 4  | Ring Set, Piston - Complete, for 1 Piston.   |

\* - Refer to, Available Oversize and Undersize Parts Chart.

PARTS LIST

PARTS LIST

| REF. NO.                                   | PART NO.       | QUANT. USED | DESCRIPTION  |
|--|----------------|-------------|--|
| FIG. 3 - CAMSHAFT AND OIL PUMP PARTS GROUP |                |             |  |
| 185-714                                    | 1              | 1           | Camshaft.  |
| 185-706                                    | 2              | 2           | Screw and Washer Assembly - 3/8-18 x 7/8" - Camshaft Thrust Plate.       |
| 6  | 4              | 1           | Plate, Thrust - Camshaft.  |
| 6  | (CO)F600L-203  | 1           | Plate, Oilier - Timing Gear.   |
| 7  | 850-50         | 1           | Washer, Lock - 3/8" Camshaft Thrust Plate - (CO)X-270.                   |
| 185-700                                    | 8              | 1           | Screw, - 7/16-14 x 1-1/4" - Camshaft Thrust Plate to Crankcase.          |
| 9  | (CO)F400H-310  | 1           | *Gear, Timing - Camshaft.  |
| 10   | 515-94         | 1           | Key - Woodruff No. 6 - (CO)X-606.  |
| 185-705                                    | 11             | 1           | Lock, Nut to Timing Gear.  |
| 12   | (CO)X-18242    | 1           | Nut, 3/4-16 - Camshaft Timing Gear.                                      |
| 185-655                                    | 13             | 1           | Bushing, Camshaft - Front.   |
| 185-677                                    | 14             | 1           | Bushing, Camshaft - Center.  |
| 185-678                                    | 15             | 1           | Bushing, Camshaft - Rear.  |
| 185-743                                    | (CO)Y400L-2110 | 8           | Tappet Assembly, Valve.  |
| 185-732                                    | (CO)Y400L-211  | 8           | Tappet Only, Valve.  |
| 185-733                                    | (CO)Y400L-212  | 8           | Nut, Lock - Valve Tappet.  |
| 185-734                                    | (CO)Y400L-213  | 8           | Screw, Adjusting - Valve Tappet.   |
| 185-745                                    | (CO)Z120L-3000 | 8           | Cap, Roto - Positive Valve Rotation Type.                                |
| 185-735                                    | (CO)Y400L-215  | 8           | Spring, Valve - Intake and Exhaust.                                      |
| 21   | (CO)F400T-233  | 8           | Guide, Valve Stem.   |
| 22   | (CO)F226A-238  | 4           | Insert, Valve Seat - Exhaust - Replaces (CO)F600A-239.                   |
| 23   | (CO)Z120L-235  | 16          | Lock, Retainer - Valve Spring (Roto).                                    |
| 185-713                                    | 24             | 4           | Valve, Exhaust - Replaces (CO)F400L-320.                                 |
| 185-719                                    | 25             | 4           | Valve, Intake.   |
| 26   | (CO)F400L-210  | 1           | Bushing, Oil Pump Drive Shaft (In Crankcase).                            |
| 185-790                                    | (CO)F600L-4131 | 1           | Pump Assembly, Oil.  |
| 28   | (CO)F600H-205  | 1           | Gear, Oil Pump Drive - Replaces (CO)D600H-220.                           |
| 27   | (CO)X-17095    | 1           | Pin, 3/16 x 15/16 - Oil Pump Drive Gear to Shaft - Replaces (CO)8UH-101. |
| 28   | (CO)F600L-4130 | 1           | Body Assembly, Oil Pump - Includes Body and Bushing.                     |
| 29   | (CO)D600G-274  | 1           | Bushing, Oil Pump Drive Shaft - (In Pump Body).                          |
| 30   | (CO)F218L-204  | 1           | Shaft, Drive - Oil Pump.   |

\* - Refer to, Available Oversize and Undersize Parts Chart.

| REF. NO.   | PART NO.       | QUANT. USED | DESCRIPTION  |
|--|----------------|-------------|--|
| FIG. 3 - CAMSHAFT AND OIL PUMP PARTS GROUP (Cont.) |                |             |  |
| 31   | 515-1          | 1           | Key, Woodruff No. 3 - Oil Pump Drive Gear to Shaft (CO)X-584.      |
| 32   | (CO)F600H-217  | 1           | Gear, Driver - Oil Pump.   |
| 33   | (CO)F600H-218  | 1           | Gear, Idler - Oil Pump.  |
| 34   | (CO)8UL-212    | 1           | Stud, Oil Pump Idler Gear.   |
| 35   | (CO)D600L-204  | 1           | Ring, Snap - Oil Pump Drive Shaft.                                 |
| 185-789  | 36             | 1           | Gasket, Oil Pump Cover.  |
| 37   | (CO)F400L-2511 | 1           | Cover Assembly, Oil Pump.  |
| 185-801  | 38             | 1           | Gasket, Oil Pump Strainer Frame.                                   |
| 39   | (CO)17EL-300   | 1           | Frame, Oil Pump Strainer Screen.                                   |
| 40   | (CO)C400L-228  | 1           | Spacer, Oil Pump Suction Cup.                                      |
| 41   | (CO)X-201      | 6           | Washer, Oil Pump Cover to Body.                                    |
| 42   | 800-4          | 8           | Screw, Oil Pump Cover to Body - (CO)X-3056.                        |
| 43   | (CO)D800L-2120 | 1           | Screen Assembly, Oil Pump Strainer.                                |
| 185-859  | 44             | 1           | Stud, Oil Pump to Bearing Cap - 3/8-16 x 1-1/2".                   |
| 45   | 850-51         | 1           | Washer, Oil Pump to Bearing Cap - (CO)X-203.                       |
| 46   | (CO)X-1802-G   | 1           | Nut, Oil Pump to Bearing Cap - 3/8-16.                             |
|  | (CO)X-14294    | 1           | Washer, 3/8 x 1/8 - Between Bearing Cap and Oil Pump Mounting Lug. |

FIG. 4 - WATER PUMP PARTS GROUP

|         |                |   |   |
|---------|----------------|---|---|
| 185-829 | 132-44         | 1 | Kit, Water Pump Replacement - (CO)F600T-275 - Includes (CO)F400K-3941 Pump. |
| 1       | (CO)F400T-202  | 1 | Kit, Water Pump Repair Parts (For servicing F400K-3941 Pump).               |
| 2       | (CO)X-3794     | 4 | Screw, Cover to Body.   |
| 185-755 | 3              | 1 | Cover, Water Pump.  |
| 4       | (CO)F400K-391  | 1 | Gasket, Water Pump Cover.   |
| 5       | (CO)F162K-2560 | 1 | Impeller, Water Pump - Replaces (CO)F400K-393.                              |
| 8       | (CO)N82K-211   | 1 | Seal, Water Pump.   |
| 7       | (CO)F400K-291  | 1 | Shedder, Water.   |
| 185-751 | (CO)X-7022     | 1 | Ring, Seat Bearing.   |
|         | (CO)F226K-2230 | 1 | Shaft and Bearing.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 4 - WATER PUMP PARTS GROUP (Cont.)

|         |               |   |   |
|---------|---------------|---|---|
| 185-749 | (CO)X-2441    | 1 | Hose, Water Pump to Water Outlet Elbow.                       |
| 10      | 503-49        | 2 | Clamp, Hose - Water Pump - (CO)X-2376.                        |
| 11      | 505-135       | 2 | Nipple, 3/8" Pipe - Water Pump Outlet - (CO)X-12517.          |
| 12      | (CO)F400K-418 | 1 | Body, Water Pump.   |
| 13      | (CO)X-7021    | 1 | Retainer, Water Pump Bearing.                                 |
| 14      | (CO)X-3938    | 1 | Screw, Fan Belt Adjusting Flange - 1/4-20 x 1/2".             |
| 15      | (CO)X-201     | 2 | Washer, Lock - Fan Belt Adjusting Flange - 1/4".              |
| 185-787 | (CO)6UK-205   | 2 | Lock, Nut - Fan Belt Adjusting Flange.                        |
| 185-754 | (CO)F400K-385 | 1 | Hub, Fan.   |
| 185-788 | (CO)12AK-203  | 1 | Flange, Fan Belt Adjusting.                                   |
| 19      | 850-51        | 3 | Washer, Lock - 3/8" - Water Pump - (CO)X-203.                 |
| 20      | 600-55        | 3 | Screw, 3/8-16 x 2-1/4" - Water Pump to Cylinder - (CO)X-3939. |
| 21      | 800-51        | 1 | Screw, 3/8-16 x 1-1/4" - Water Pump to Cylinder - (CO)X-3063. |
| 22      | (CO)X-14134   | 1 | Washer, Copper - 3/8" - Water Pump to Cylinder.               |
| 185-752 | (CO)F400K-340 | 1 | Gasket, Water Pump to Cylinder Block.                         |

FIG. 5 - OIL SYSTEM GROUP

|   |         |   |  |
|---|---------|---|--|
| 1 | 122-91  | 1 | Filter, Oil - Complete with Cartridge and Wide Mounting Bracket. |
| 2 | 122-37  | 1 | Cartridge, Oil Filter Refill - Includes Gaskets.                 |
| 3 | 502-2   | 2 | Elbow, Inverted Male - Oil Filter Lines.                         |
|   |         |   | Line, Oil Filter Return -  |
| 4 | 122A66  | 1 | For Parts Key Nos. 1 through 5.                                  |
|   | 501A22  | 1 | For Parts Key No. 6 (Flexible) Not Illustrated.                  |
| 5 | 122A67  | 1 | Line, Oil Filter Inlet.  |
| 6 | 520A221 | 2 | Stud, Oil Filter Mounting.                                       |
| 7 | 505-50  | 1 | Elbow, Pipe Street - Oil Drain - 1/2".                           |
| 8 | 505-100 | 2 | Nipple, Pipe Close - Oil Drain - 1/2"                            |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 5 - OIL SYSTEM GROUP (Cont.)

|    |         |   |  |
|----|---------|---|--|
| 9  | 504-11  | 1 | Valve, Oil Drain - 1/2".   |
| 10 | 503-197 | 1 | Clamp, Hose - Oil Drain.   |
| 11 |         |   | Hose, Oil Drain -  |
|    | 503-94  | 1 | For Parts Key Nos. 1 through 5 Prior to Spec F (13" Long).                           |
|    | 503-316 | 1 | For Parts Key No. 6 (Also used on Parts Key Nos. 1 through 5 Begin Spec F) 11" Long. |
| 12 | 123B96  | 1 | Tube, Oil Fill.  |
| 13 | 123A20  | 1 | Cap, Oil Fill Tube.  |
|    | 505-7   | 1 | Bushing, Pipe Reducer - 1/4 to 1/8".   |
|    | 502-1   | 1 | Tee, Inverted.   |

Note: Refer to Control Group for Oil Pressure Gauge and Sending Unit.

FIG. 6 - MUFFLER GROUP

|   |         |   |   |
|---|---------|---|---|
| 1 | 155A360 | 1 | Ring, Exhaust Clamp - Parts Key Nos. 1 through 5 Prior to Spec F.   |
| 2 | 155B377 | 1 | Elbow, Exhaust - 1-5/16 O.D. Tubing at manifold end - Housed Plants only with Parts Key Nos. 1 through 5 Prior to Spec F. |
| 3 | 505-43  | 1 | Elbow, Pipe - Muffler Outlet - 1-1/2" - Housed Plants only with Parts Key Nos. 1 through 5 Prior to Spec F.               |
| 4 |         |   | Muffler, Exhaust -  |
|   | 155B77  | 1 | Parts Key Nos. 1 through 5 Prior to Spec F.   |
|   | 155B456 | 1 | Parts Key Nos. 1 through 5 Begin Spec F.  |
|   | 155C436 | 1 | Parts Key No. 6.  |
| 5 | 155B74  | 1 | Bracket, Muffler Mounting - Parts Key Nos. 1 through 5 Prior to Spec F.   |
| 6 | 155A390 | 1 | Pipe, Exhaust - Unhoused Plants only with Parts Key Nos. 1 through 5 Prior to Spec F.                                     |
| 7 |         |   | Tube, Flexible Exhaust -  |
|   | 155B165 | 1 | Parts Key Nos. 1 through 5 Prior to Spec F (Unhoused Plants only).  |
|   | 155B467 | 1 | Parts Key Nos. 1 through 5 Begin Spec F.  |



| REF. NO.                       | PART NO. | QUANT. USED | DESCRIPTION   |
|--------------------------------|----------|-------------|---|
| FIG. 6 - MUFFLER GROUP (Cont.) |          |             |   |
| 8                              | 155A565  | 1           | Flange, Muffler Mounting -  |
|                                | 155A441  | 1           | Parts Key Nos. 1 through 5 Begin Spec F.  |
| 9                              | 154P351  | 1           | Parts Key No. 6.  |
|                                | 155A445  | 1           | Gasket, Muffler Mounting Flange -   |
|                                | 505-183  | 1           | Parts Key Nos. 1 through 5 Begin Spec F.  |
|                                |          |             | Elbow, Pipe Reducer - 1-1/2 to 1-1/4 - Muffler Outlet - Unhoused Plants only with Parts Key Nos. 1 through 5 Prior to Spec F. |

FIG. 7 - GOVERNOR AND GOVERNOR LINKAGE GROUP

|   |               |   |   |
|---|---------------|---|---|
| 1 | 151P114       | 1 | Governor Assembly - With Gear (For component parts, see separate group) - |
|   | 151P175       | 1 | *Prior to Spec E (HOF)6D268-C5127.  |
|   | 151P182       | 1 | *Spec E Only - Prior to Serial #590078 (HOF)6D270-C5137.                  |
|   | 151A139       | 1 | Begin Serial #590078 (HOF)6D270-C7147.                                    |
| 2 | (CO)Y91S-215  | 1 | Gasket, Governor Mounting.  |
| 3 | (CO)F400S-201 | 1 | Gasket, Governor Flange Plate.  |
| 4 | (CO)X-318     | 1 | Plate, Governor Flange (Kidney Shaped).                                   |
| 5 | (CO)X-3283    | 1 | Gasket, Governor to Gear Cover - Upper - 3/8" Copper Asbestos.            |
| 6 | 520A479       | 1 | Screw, Governor to Gear Cover - 3/8-16 x 3-5/8" Long.                     |
| 7 | 150A638       | 2 | Stud, Governor Link.  |
| 8 | 150A432       | 1 | Joint, Ball - Governor Link - 1/4-28 Thread (Replaces #150A69).           |
| 9 |               |   | Linkage Assembly, Governor.   |

\* - For complete assembly, use #151P182.

| REF. NO.   | PART NO.      | QUANT. USED | DESCRIPTION   |
|--|---------------|-------------|---|
| FIG. 8 - GOVERNOR PARTS GROUP - PLANTS PRIOR TO SPEC E |               |             |   |
|  | 151P114       | 1           | Governor - Complete (Includes Gear) - (HOF) #GD268-C5127 (For complete assembly, use Governor #151P182. |
| 1  | (HOF)D104-80  | 1           | Lever, Throttle.  |
| 2  | (HOF)D164-110 | 1           | Lever Assembly - Includes Lever and following 9 parts not individually illustrated.                     |
|  | (HOF)D132-81  | 1           | Pin, Sensitivity Adjusting.   |
|  | (HOF)D117-86  | 1           | Washer, Adjusting Pin.  |
|  | (HOF)D117-87  | 1           | Washer, Lock - Adjusting Pin.   |
|  | (HOF)C115-29  | 1           | Nut, Adjusting Pin.   |
|  | (HOF)D105-114 | 1           | Link, Spring Attaching.   |
|  | (HOF)D129-21  | 1           | Bushing, Spring Link.   |
|  | (HOF)D133-17  | 1           | Bearing, Spring Link.   |
|  | (HOF)D117-86  | 1           | Washer, Spring Link.  |
|  | (HOF)D165-33  | 1           | Retainer, Link to Pin - Replaces (HOF)D165-18.  |
| 3  | (HOF)D132-76  | 1           | Pin, Throttle Lever to Rocker Shaft.  |
| 4  | (HOF)D110-57  | 2           | Spring, Speed Adjusting (120 #Rate - Black).  |
| 5  | (HOF)D165-32  | 4           | Retainer, Flyweight Pivot Pin - Replaces (HOF)D165-17.  |
| 6  | (HOF)C132-88  | 2           | Pin, Flyweight Pivot - Replaces (HOF)C132-59.   |
| 7  | (HOF)D164-118 | 2           | Flyweight, Complete with Bearing and Pin.   |
| 8  | (HOF)D114-128 | 3           | Screw - (1) Bearing to Cover, (2) Cover to Body.  |
| 9  | (HOF)D117-88  | 3           | Washer, Lock - (1) Bearing to Cover, (2) Thrust Lever to Shaft.   |
| 10   |               | 1           | Cover, Body - NOT SOLD SEPARATELY.  |
| 11   | (HOF)D147-7   | 1           | Key, Gear to Shaft.   |
| 12   | (HOF)D171-11  | 1           | Gear, Drive   |
| 13   | (HOF)D117-76  | 1           | Washer, Lock - Gear to Shaft.   |
| 14   | (HOF)H115-23  | 1           | Nut, Gear to Shaft.   |
| 15   | (HOF)D133-18  | 1           | Bearing, Front Main Ball.   |
| 16   | (HOF)D164-122 | 1           | Shaft and Yoke, Main - Rotating and Flyweights Attaching Member.  |
| 17   | (HOF)D164-117 | 1           | Sleeve, Thrust Bearing and.   |
| 18   | (HOF)D133-14  | 1           | Bearing, Rear Main - Rushing Type.  |
| 19   |               | 1           | Body - NOT SOLD SEPARATELY.   |
| 20   | (HOF)D133-10  | 2           | Bearing, Needle - Rocker Shaft - Use (HOF)D164-187 Body Assembly.                                       |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 8 - GOVERNOR PARTS GROUP - PLANTS PRIOR TO SPEC E (Cont.)

|    |               |   |   |
|----|---------------|---|---|
| 21 | (HOF)D150-89  | 2 | Spacer, Welch Plug.   |
| 22 | (HOF)D140-18  | 1 | Plug, Welch.  |
| 23 | (HOF)C164-86  | 1 | Screw, Bumper - Complete with Spring and Nut.               |
| 24 | (HOF)D127-74  | 1 | Shaft, Rocker - Use (HOF)D164-187 Body Assembly.            |
| 25 | (HOF)D108-6   | 1 | Seal, Oil - Rocker Shaft - Use (HOF)D164-187 Body Assembly. |
| 26 | (HOF)D117-72  | 1 | Washer, Lever Spacer.                                       |
| 27 | (HOF)D114-106 | 1 | Screw, Bushing to Body.                                     |
| 28 | (HOF)D117-87  | 1 | Washer, Lock - Bushing to Body.                             |
| 29 | (HOF)D129-18  | 1 | Bushing, Speed Adjusting Lever Pivot.                       |
| 30 | (HOF)D114-124 | 2 | Screw, Thrust Lever to Rocker Shaft.                        |
| 31 | (HOF)D164-111 | 1 | Lever and Yoke, Speed Adjusting.                            |
| 32 | (HOF)D114-129 | 1 | Screw, Adjusting.   |
| 33 | (HOF)C115-29  | 1 | Nut, Lock - Speed Adjusting Screw.                          |
| 34 | (HOF)D105-67  | 1 | Lever, Rocker Thrust.                                       |
|    | (HOF)C107-41  | 1 | Gasket, Bumper Screw Nut.                                   |

FIG. 8A - GOVERNOR PARTS GROUP - PLANTS BEGIN SPEC E

|   |               |   |  |
|---|---------------|---|--|
|   | 151P175       | 1 | Governor - Complete with Gear.   |
|   | 151P182       | 1 | Prior to Serial #590078 (HOF)GD270-C5137 (For complete assembly, use #151P182).                    |
| 1 | (HOF)D104-145 | 1 | Begin with Serial #590078 (HOF)GD270-C7147.  |
| 2 |               | 1 | *Lever, Throttle.  |
|   |               | 1 | Sensitivity Assembly - Includes Lever and following indented parts, not individually illustrated - |
|   | (HOF)D132-81  | 1 | Pin, Sensitivity Adjusting -   |
|   | (HOF)D132-83  | 1 | Prior to Serial #590078.   |
|   | (HOF)D165-33  | 1 | Begin with Serial #590078.   |
|   | (HOF)D117-86  | 1 | Retainer, Spring Bushing to Pin - Replaces (HOF)D165-18.   |
|   | (HOF)D117-46  | 1 | Washer, Sensitivity Pin to Spring Bushing - Prior to Serial #590078.                               |
|   |               | 1 | Washer, Sensitivity Spring.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 8A - GOVERNOR PARTS GROUP - PLANTS BEGIN SPEC E (Cont.)

|    |               |   |   |
|----|---------------|---|---|
|    | (HOF)D129-29  | 1 | Bushing, Spring Link - Prior to Serial #590078.                                     |
|    | (HOF)D133-17  | 1 | Bearing, Spring Link - Prior to Serial #590078.                                     |
|    | (HOF)D105-127 | 1 | Link, Spring - Begin with Serial #590078.   |
|    | (HOF)D117-85  | 1 | Spacer, Spring Link - Begin with Serial #590078.                                    |
|    | (HOF)D117-87  | 1 | Washer, Lock - Adjusting Pin.   |
|    | (HOF)D115-29  | 1 | Nut, Adjusting Pin.   |
|    | (HOF)D132-76  | 1 | *Pin, Throttle Lever to Rocker Shaft.   |
|    | (HOF)D165-31  | 1 | *Retainer, Bearing to Shaft.  |
| 3  | (HOF)D117-72  | 1 | *Washer, Lever Spacer.  |
| 4  | (HOF)D114-133 | 1 | Screw, Speed Adjusting.   |
| 5  | (HOF)D115-29  | 1 | Nut, Lock - Speed Adjusting Screw.  |
| 6  |               | 1 | Lever, Speed Adjusting -  |
|    | (HOF)D105-223 | 1 | Prior to Serial #590078.  |
|    | (HOF)D105-292 | 1 | Begin with Serial #590078.  |
| 7  | (HOF)D129-18  | 1 | Bushing, Adjusting Lever Pivot.   |
| 8  | (HOF)D117-87  | 1 | Washer, Lock - Adjusting Lever to Body.   |
| 9  | (HOF)D114-179 | 1 | Screw, Adjusting Lever to Body.   |
| 10 |               | 1 | Spring, Speed (120 #Rate - Black) -   |
|    | (HOF)D110-85  | 1 | Prior to Serial #590078.  |
|    | (HOF)D110-57  | 1 | Begin with Serial #590078.  |
| 11 | (HOF)D164-120 | 1 | Screw, Bumper - Complete with Spring, Nut and Seal.                                 |
| 12 | (HOF)D127-133 | 1 | *Shaft, Rocker.   |
| 13 | (HOF)D133-24  | 2 | *Bearing, Rocker Shaft.   |
| 14 | (HOF)D108-8   | 1 | *Seal, Rocker Shaft OIL.  |
| 15 | (HOF)D105-67  | 1 | Lever, Rocker Shaft.  |
| 16 | (HOF)D114-183 | 2 | Screw, Lever to Rocker Shaft.   |
| 17 | (HOF)D150-101 | 2 | *Spacer, Welch Plug.  |
| 18 | (HOF)D140-24  | 1 | *Plug, Welch.   |
| 19 | (HOF)D133-14  | 1 | *Bearing, Rear Main - Bushing Type.   |
| 20 |               | 1 | *Body only - NOT SOLD SEPARATELY.   |
| 21 | (HOF)D164-293 | 1 | Gear Assembly - Includes Gear, Shaft, Cover, Ball Bearing, Rivet and Yoke.          |
| 22 | (HOF)D164-393 | 1 | Thrust Sleeve and Bearing Assembly - Includes Sleeve, Bearing, Washer and Retainer. |

\* - Included in Body Assembly (HOF)D164-451.

| REF. NO.   | PART NO.      | QUANT. USED | DESCRIPTION  |
|--|---------------|-------------|--|
| FIG. 8A - GOVERNOR PARTS GROUP - PLANTS BEGIN SPEC E (Cont.) |               |             |  |
| 23   | (HOF)D164-118 | 2           | Flyweight Assembly - Includes Thrust Pin and Bearing - |
|  | (HOF)D164-547 | 2           | Prior to Serial #590078.                               |
|  | (HOF)D132-88  | 2           | Begin with Serial #590078.                             |
| 24   | (HOF)D165-32  | 4           | Pin, Flyweight Pivot.                                  |
| 25   | (HOF)D114-128 | 1           | Retainer, Flyweight Pivot - Replaces (HOF)D165-17.     |
| 26   | (HOF)D164-451 | 1           | Screw, Cover to Body.                                  |
| 27   |               | 1           | Body Assembly - Includes parts marked (*).             |

FIG. 9 - FUEL SYSTEM GROUP - GASOLINE

|    |         |   |   |
|----|---------|---|---|
| 1  | 143K80  | 1 | Gasket Kit, Carburetor.   |
| 2  | 153A26  | 1 | Gasket, Insulating - Choke Control to Manifold.   |
|    | 153P87  | 1 | Choke, Automatic - Sisson (Note: Not used on units with water cooled manifold) -        |
|    | 153A195 | 1 | Parts Key Nos. 1 through 5 (12 Volt).   |
| 3  | 503-107 | 3 | Parts Key No. 6 (6 Volt).   |
| 4  | 153A159 | 1 | Clamp, Hose - Air Cleaner Hose Mounting (Replaces #503A22).                             |
|    | 153A199 | 1 | Rod, Choke Control -  |
|    | 518-8   | 1 | Parts Key Nos. 1 through 5 Prior to Spec F (11-1/8" Long).                              |
| 5  | 518-47  | 1 | Parts Key No. 6 (Also used on Parts Key Nos. 1 through 5 Begin Spec F) 10" Long.        |
|    | 140A218 | 1 | Clip, Choke Control Rod End -   |
| 8  | 140B303 | 1 | Parts Key Nos. 1 through 5 Prior to Spec F.   |
| 7  | 140A78  | 2 | Parts Key No. 6 (Also used on Parts Key Nos. 1 through 5 Begin Spec F).                 |
| 8  | 140B311 | 1 | Bracket, Air Cleaner Hose Mounting.   |
| 9A | 140B287 | 1 | Cleaner, Air.   |
|    | 140B368 | 1 | Band, Air Cleaner.  |
|    |         | 1 | Bracket, Air Cleaner -  |
|    |         | 1 | Parts Key Nos. 1 through 5 Prior to Spec F (Unhoused Plants only).                      |
|    |         | 1 | Parts Key Nos. 1 through 5 Begin Spec F (Also used on Parts Key Nos. 1 through 5 Housed |
|    |         | 1 | Plants Prior to Spec. F).   |
|    |         | 1 | Parts Key No. 6.  |

| REF. NO.                                      | PART NO. | QUANT. USED | DESCRIPTION  |
|---|----------|-------------|--|
| FIG. 9 - FUEL SYSTEM GROUP - GASOLINE (Cont.) |          |             |  |
| 10  | 503A205  | 1           | Hose, Air Cleaner -  |
|   | 503A272  | 1           | Parts Key Nos. 1 through 5 (32") Note: Hose must be shortened slightly for Unhoused models Prior to Spec F.        |
| 11  | 503A207  | 1           | Parts Key No. 8 (36").   |
|   | 503A262  | 1           | Hose, Breather - Valve Compartment Cover to Air Cleaner -  |
|   | 503-186  | 1           | Parts Key Nos. 1 through 5 Prior to Spec F. (Housed Plants only).  |
| 12  | 503P131  | 2           | Parts Key Nos. 1 through 5 Begin Spec F (Also used on Parts Key Nos. 1 through 5 Unhoused Plants Prior to Spec F). |
| 13  | 149A394  | 1           | Parts Key No. 6.   |
| 14  | 143C21   | 1           | Clamp, Breather Hose.  |
| 15  | 141-281  | 1           | Line, Fuel - Pump to Carburetor.   |
| 16  | 508-2    | 1           | Carburetor, Gasoline - Carter # UT-2054S (Note: Not used on plants with water cooled manifold).                    |
| 17  | 505-19   | 1           | Gasket, Carburetor to Manifold.  |
| 18  | 505A135  | 1           | Grommet, Rubber - 3/8" I.D.  |
| 19  | 149P61   | 1           | Bushing, Pipe Reducer - 1/2 to 3/8 - Breather.   |
| 20  | 149A128  | 1           | Nipple, Pipe Half - 3/8 x 1-1/2" - Breather.   |
| 21  | 502-2    | 2           | Pump, Fuel.  |
|   | 502-65   | 1           | Gasket, Fuel Pump Mounting.  |
| 22  | 520A223  | 1           | Elbow, Inverted Male - (1) Carburetor, (1) Fuel Pump.  |
|   | 520A567  | 1           | Elbow, Inverted - 45°.   |
|   | 149K508  | 1           | Stud, Carburetor Mounting -  |
|   | 336A505  | 1           | 5/16 x 1-1/4".   |
|   | 143A58   | 1           | 5/16 x 1-1/2".   |
|   | 153A155  | 1           | Repair Parts Kit, Fuel Pump (Replaces #149K75).  |
|   | 153A58   | 1           | Lead, Choke Ground - Parts Key Nos. 1 through 5 Begin Spec F.  |
|   | 153-57   | 1           | †Carburetor, Gasoline - Basic #143C21 with provision for ONAN Choke.   |
|   | 153A49   | 1           | †Adapter, ONAN Choke - Mounts to Carburetor.   |
|   | 143A57   | 1           | †Housing, Thermostatic Bi-Metal - ONAN Choke.  |
|   |          | 1           | †Bi-Metal, Thermostatic - ONAN Choke.  |
|   |          | 1           | †Cover, ONAN Choke - 1-17 Volt heating element - 12 Volt cranked plants only.                                      |
|   |          | 1           | †Shaft, Carburetor Choke - Includes twisted knob - For plants with ONAN Choke.                                     |

† - These parts apply for plants with special water cooled manifold. Onan electric choke is used instead of Sisson Automatic Choke.

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 11 - MOUNTED FUEL TANK GROUP - HOUSED PLANTS ONLY (OPTIONAL EQUIPMENT) Cont.

|    |         |   |                               |
|----|---------|---|-------------------------------|
| 16 | 149A12  | 1 | Filter, Fuel.                 |
| 17 | 149-157 | 1 | Gasket, Fuel Filter Bowl.     |
|    | 505-57  | 1 | Plug, Pipe.                   |
|    | 502-53  | 1 | Elbow, 45° - Parts Key No. 6. |

FIG. 12 - FUEL SYSTEM GROUP - OPTIONAL (GAS ONLY or GAS-GASOLINE COMBINATION)

NOTE: Two types of gas pressure regulators have been used. Compare nameplate on regulator for manufacturer.

- \* - Ensign Manufacture Regulator and associated parts used prior to Serial #578166.
- ▲ - Garrettson Manufacture Regulator and associated parts used begin with Serial #578168.
- † - These parts used both prior to: and begin with above serial number.

|    |         |   |  |
|----|---------|---|--|
|    | 148K341 | 1 | Conversion Kit, Gas-Gasoline Combination - Includes all parts marked ▲ or † (unless specified as for Gas Fuel only). |
|    | 148K349 | 1 | Conversion Kit, Gas Fuel only - Includes all parts marked ▲ or † (unless specified as for Gas-Gasoline only).        |
|    |         |   | Regulator, Gas Pressure -  |
|    |         |   | * Ensign Manufacture.  |
| 1  | 148-9   | 1 | ▲ Garrettson Manufacture.  |
| 1A | 148-311 | 1 |  |
| 2  |         |   | Hose, Rubber - Regulator to Carburetor -   |
|    | 503-158 | 1 | * 5/8" I.D. x 36" Long.  |
|    | 503-260 | 1 | ▲ 5/8" I.D. x 42" Long.  |
| 3  | 503-49  | 2 | † Clamp, Hose.   |
| 4  | 505-131 | 1 | * Bushing, Reducer - Regulator Outlet (3/4" x 3/8" I.P.S.).  |
| 5  | 505A135 | 1 | † Nipple, Pipe Half - Regulator to Hose - 3/8" I.P.S.  |
|    |         |   | Plug, Pipe - Regulator - 1/8" -  |
| 6  | 505-8   | 1 | * Slotted Head.  |
| 7  | 505-57  | 1 | ▲ Square Head.   |
| 8  | 505-39  | 1 | ▲ Elbow, Pipe - Regulator Outlet (3/8" x 90°).   |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 12 - FUEL SYSTEM GROUP - OPTIONAL (GAS ONLY or GAS-GASOLINE COMBINATION) Cont.

|     |         |   |   |
|-----|---------|---|---|
| 9   | 505-130 | 1 | ▲ Plug, Pipe - Regulator - 3/4".  |
| 10  | 505-101 | 1 | ▲ Nipple, Pipe - Regulator Outlet (3/8" x 1").  |
| 11  | 148A107 | 1 | ▲ Vent, Atmospheric - Regulator.  |
| 12  | 141A281 | 1 | † Gasket, Carburetor Mounting.  |
| 13  | 143B62  | 1 | * Carburetor Assembly, Gas-Gasoline Combination - Includes indented parts marked * or † (Unless specified as for Gas Fuel only) Note: For parts not listed in this group, refer to the Gasoline Carburetor Parts Group. |
| 13A | 143B148 | 1 | ▲ Carburetor Assembly, Gas-Gasoline Combination - Includes indented parts marked ▲ or † (Unless specified as for Gas Fuel only) Note: For parts not listed in this group, refer to the Gasoline Carburetor Parts Group. |
| 14  | 148C208 | 1 | * Carburetor Assembly, Gas Fuel only - Includes indented parts marked * or † (Unless specified as for Gas-Gasoline only).   |
| 14A | 149C348 | 1 | ▲ Carburetor Assembly, Gas Fuel only - Includes indented parts marked ▲ or † (Unless specified as for Gas-Gasoline only).   |
| 15  |         |   | Stud, Carburetor Mounting -   |
|     | 520A223 | 1 | 5/16 x 1-1/4".  |
|     | 520A587 | 1 | 5/16 x 1-1/2".  |
|     | 148A171 | 1 | * Counterweight, Choke.   |
|     | 148A209 | 1 | * Shaft, Choke.   |
|     | 148A210 | 1 | * Butterfly, Choke Shaft.   |
|     | 143-26  | 1 | † Shaft and Lever, Throttle - GAS FUEL ONLY.  |
|     | 148C203 | 1 | † Body, Carburetor - GAS FUEL ONLY.   |
|     | 142-344 | 1 | † Needle, Idle Adjusting - GAS FUEL ONLY.   |
|     | 142-76  | 1 | † Spring, Idle Adjusting Needle - GAS FUEL ONLY.  |
|     | 505A135 | 1 | † Nipple, Pipe Half - Fuel Connection (3/8" x 1-1/2" Long) - GAS FUEL ONLY.   |
|     |         |   | † Venturi -   |
|     | 148A207 | 1 | GAS FUEL ONLY.  |
|     | 143-54  | 1 | GAS-GASOLINE ONLY.  |
|     | 148A219 | 1 | * Adapter Assembly - Includes counterweight, choke shaft, butterfly and hardware - GAS-GASOLINE ONLY.   |
|     | 148B204 | 1 | † Adapter, Air Hose and Choke - GAS FUEL ONLY.  |
|     | 148A205 | 1 | † Gasket, Carburetor Body to Adapter - GAS FUEL ONLY.   |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION  |
|---|----------|-------------|--|
| FIG. 12 - FUEL SYSTEM GROUP - OPTIONAL (GAS ONLY or GAS-GASOLINE COMBINATION) Cont. |          |             |  |
|   | 148A208  | 1           | †Screw, Gas Adjusting (Power Jet) GAS FUEL ONLY.                                       |
|   | 143-25   | 1           | †Butterfly, Throttle Shaft - GAS FUEL ONLY.  |
|   | 143-45   | 1           | †Screw, Idle Stop - GAS FUEL ONLY.   |
|   | 148A222  | 1           | †Float, Fuel Level - GAS-GASOLINE ONLY.  |
|   | 148A17   | 1           | †Gasket, Bushing - Float Lock Mechanism - GAS-GASOLINE ONLY.                           |
|   | 148A223  | 1           | †Lock, Float - GAS-GASOLINE ONLY.  |
|   | 148A224  | 1           | †Valve, Gas Fuel Inlet - GAS-GASOLINE ONLY.  |
|   | 502-2    | 1           | †Elbow, Inverted Male - GAS-GASOLINE ONLY.   |
|   | 803-2    | 1           | *Screw, Set - Socket Head - Counterweight.   |
|   | 812-15   | 2           | *Screw, Round Head - Butterfly to Choke Shaft (3-48 x 1/4").                           |
|   | 812-15   | 2           | †Screw, Round Head - Butterfly to Throttle Shaft (3-48 x 1/4") GAS FUEL ONLY.          |
|   | 854-3    | 2           | *Washer, Shakeproof - Butterfly to Choke Shaft Screw.                                  |
|   | 854-3    | 2           | †Washer, Shakeproof - Butterfly to Throttle Shaft Screw - GAS FUEL ONLY.               |
|   | 868-4    | 1           | †Nut, Hex Jam - Power Adjusting Screw (7/16-20) GAS FUEL ONLY.                         |
|   | 800-7    | 2           | †Screw, Hex Head Cap - Carburetor Body to Adapter (1/4-20 x 1") GAS FUEL ONLY.         |
|   | 850-40   | 2           | †Washer, Lock - Carburetor Body to Adapter Screw (1/4") GAS FUEL ONLY.                 |
|   | 517A30   | 1           | †Plug - Passage In Body - GAS FUEL ONLY.   |
|   | 517A10   | 2           | †Plug - Adapter Holes - GAS FUEL ONLY.   |
|   | 850-40   | 1           | *Washer, Lock - Adapter to Carburetor Clamp Screw (1/4") GAS-GASOLINE ONLY.            |
|   | 812-152  | 1           | *Screw, Round Head - Clamps Adapter to Carburetor Body (1/4 x 7/8") GAS-GASOLINE ONLY. |
|   | 815-118  | 1           | †Screw, Fillister Head - Lock Automatic Choke (8-32 x 1/4") GAS-GASOLINE ONLY.         |
|   | 870-135  | 1           | †Nut, Pal - Gas Fuel Inlet Valve to Carburetor Body (7/16-20) GAS-GASOLINE ONLY.       |

\*, † or ‡ - See Note at beginning of this group.

FIG. 13 - SEPARATE FUEL TANK AND DAY TANK GROUP - OPTIONAL EQUIPMENT

|         |   |  |
|---------|---|--|
| 159A308 | 1 | Tank Assembly, Reservoir (Day) Optional on Parts Key Nos. 1 through 5.     |
| 159A540 | 1 | Prior to Spec F (Housed Plants only) Includes parts marked *.              |
| 159A864 | 1 | Prior to Spec F (Unhoused Plants only) Includes parts marked *.            |
| 159A734 | 1 | Prior to Serial #643150 Spec F Models only (Includes parts marked * or †). |
|         |   | Begin Serial #643150 during Spec F (Includes parts marked *, † or ‡).      |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION   |
|--|----------|-------------|---|
| FIG. 13 - SEPARATE FUEL TANK AND DAY TANK GROUP - OPTIONAL EQUIPMENT (Cont.) |          |             |   |
| 1  | 415B126  | 1           | Tank, Fuel - Dome Top - 5 Gallon (Replaces Flat Top Tank #415A10).                    |
| 2  | 504A13   | 1           | Valve, Shut Off - For Separate 5 Gallon Tank.   |
| 3  | 501A27   | 1           | Line, Fuel - Separate Tank to Plant.  |
| 4  | 415B124  | 1           | Cap, Rain - Rubber.   |
| 5  | 159B294  | 1           | *Tank, Reservoir (Day or Standby).  |
|  |          |             | *Band, Reservoir Tank -   |
| 6  | 159A641  | 1           | Begin with Spec F.  |
| 8A   | 159A121  | 1           | Prior to Spec F.  |
|  |          |             | *Bracket, Reservoir Tank Mounting -   |
| 7  | 159A657  | 1           | Begin with Spec F.  |
| 7A   | 159B302  | 1           | Prior to Spec F (Housed Plants only).   |
| 7B   | 159A419  | 1           | Prior to Spec F (Unhoused Plants only).   |
| 8  | 502-24   | 2           | *Elbow, Male Compression.   |
| 9  |          |             | *Bushing, Reducer - Pipe.   |
|  | 505-17   | 1           | Prior to Serial #643150.  |
|  | 159A705  | 1           | Begin Serial #643150.   |
| 10   | 504A39   | 1           | *Valve, Shut off - With Strainer - Prior to Serial #643150.                           |
| 11   | 505-57   | 2           | *Plug, Pipe - Square Head (NOTE: Quantity is 1 only prior to Serial #643150)          |
| 12   |          |             | Line, Fuel - Reservoir Tank to Pump -   |
|  | 159C656  | 1           | †Begin with Spec F.   |
|  | 149A509  | 1           | Prior to Spec F (Housed Plants only).   |
|  | 149A521  | 1           | Prior to Spec F (Unhoused Plants only).   |
| 13   |          |             | Line, Fuel - Reservoir Tank to Carburetor -   |
|  | 159C655  | 1           | †Begin with Spec F.   |
|  | 149A510  | 1           | Prior to Spec F (Housed Plants only).   |
|  | 149A522  | 1           | Prior to Spec F (Unhoused Plants only).   |
| 14   | 307P565  | 1           | *Valve, Solenoid - Reservoir Tank - Begin Serial #643150.                             |
| 15   | 502-82   | 1           | *Nipple, Hex - Solenoid Valve to Tank - Begin Serial #643150.                         |
| 18   | 501A5    | 1           | Line, Fuel Return - Flexible - Begin Serial #643150.                                  |
| 17   | 502-2    | 1           | Elbow, Inverted Male - Fuel Return Line to Restricted fitting - Begin Serial #643150. |

| REF. NO.   | PART NO.   | QUANT. USED | DESCRIPTION  |
|--|------------|-------------|--|
| FIG. 14 - MAGNETO IGNITION GROUP (PRIOR TO SPEC E)   |            |             |  |
| NOTE: Beginning with Spec "B" models, Magneto was changed from Wico (using separate shielding) to Fairbanks Morse (with shielding integral). |            |             |  |
|  |            |             | Magneto -  |
| 1  | 162P225    | 1           | Parts Key Nos. 1 through 5 (Spec A only) WICO #XVD-2299 (For complete replacement use #161-162.  |
| 2  | 161-162    | 1           | Parts Key Nos. 1 through 5 (Begin Spec B) Fairbanks Morse #XVE4C69A (Excludes Stop Stud Assembly) Note: Also used on Parts Key No. 6 (For components, see separate group). |
| 3  | 162B210    | 1           | Shield Assembly, Magneto Suppression - Parts Key Nos. 1 through 5 (Spec A only).   |
| 4  | 167A41     | 4           | Shield Assembly, Spark Plug.   |
| 5  |            |             | Lead, Magneto Stop -   |
|  | 336A981    | 1           | Housed Plants.   |
|  | 336A91     | 1           | Unhoused Plants.   |
| 6  | 336A980    | 1           | Lead, High Temperature Cut off to Magneto (Optional on Unhoused Units).  |
| 7  | 167-34     | 4           | Plug, Spark - Champion 6MJ.  |
| 8  | 167A1131   | 4           | Lead, Spark Plug - Shielded - 19".   |
| 9  | 166A103    | 1           | Clamp, Magneto Mounting.   |
| 10   | 336A476    | 1           | Cable, Ground.   |
| 11   | (WCE)X6942 | 1           | Point Set, WICO Magneto - Parts Key Nos. 1 through 5 (Spec A only).  |
| 12   | 162-227    | 1           | Condenser, WICO Magneto (WCE)X6916 - Parts Key Nos. 1 through 5 (Spec A only).   |
| 13   | (WCE)X5531 | 1           | Rotor, WICO Magneto Distributing - Parts Key Nos. 1 through 5 (Spec A only).   |
| 14   | (WCE)X5981 | 1           | Cap, WICO Magneto Distributing - Parts Key Nos. 1 through 5 (Spec A only).   |
| 15   | (WCE)6081  | 1           | Gasket, WICO Distributing Cap - Parts Key Nos. 1 through 5 (Spec A only).  |
| 16   | (WCE)5077  | 1           | Felt, WICO Magneto Cam Wiper - Parts Key Nos. 1 through 5 (Spec A only).   |
| 17   | 161A163    | 1           | Stud Assembly, Fairbanks Morse Magneto Stop - Includes parts marked * - Parts Key Nos. 1 through 5 Begin Spec B (also Parts Key No. 6).                                    |
| 18   | 161A12     | 1           | *Insulator, Stop Stud to Magneto (FBM)A1168 - Parts Key Nos. 1 through 5 Begin Spec B (also Parts Key No. 6).  |
| 19   | 508-15     | 2           | *Washer, Insulating - Stop Stud Knurled Nut - Parts Key Nos. 1 through 5 Begin Spec B (Also Parts Key No. 6).  |
| 20   | 161P164    | 1           | *Nut, Knurled Female - Stop Stud Securing (FBM)B2735A (Also Included in Magneto Assembly) Parts Key Nos. 1 through 5 Begin Spec B (Also Parts Key No. 6).                  |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION   |
|---|----------|-------------|---|
| FIG. 15 - BATTERY IGNITION GROUP (BEGIN SPEC E) |          |             |   |
| 1   | 166B4    | 1           | Distributor.  |
| 2   | 160A166  | 1           | Clamp, Distributor Adjusting.   |
| 3   |          |             | Coll. Ignition -  |
|   | 166P269  | 1           | Parts Key Nos. 1 through 5 (12 Volt).   |
|   | 166B268  | 1           | Parts Key No. 6 (6 Volt).   |
| 4   | 167-129  | 4           | Plug, Spark.  |
| 5   | 314P32   | 4           | Suppressor, Spark Plug - Parts Key Nos. 1 through 5 (Parts Key No. 6, use #314-156).                        |
| 6   |          |             | Cable, High Tension - Does not include suppressor -   |
|   | 167A1070 | 4           | Distributor to Spark Plugs (13-1/4").   |
|   | 167A1316 | 1           | Coll to Suppressor (7-1/4").  |
|   | 167A1312 | 1           | Distributor to Suppressor (3").   |
| 6A  |          |             | Suppressor, Coll to Distributor.  |
| 7   | 314-6    | 1           | Condenser, Coll - Suppression.  |
| 8   | 312A15   | 1           | Cap, Distributor.   |
| 9   | 166P235  | 1           | Rotor, Distributor.   |
| 10  | 166P234  | 1           | Point Set, Contact - Distributor.   |
| 11  | 166P245  | 1           | Clamp, Coll.  |
| 12  | 168-101  | 1           | Insert, Coll Clamp.   |
| 13  | 168-102  | 1           | Lead -  |
| 14  |          |             | Distributor to Coll-Parts Key No. 6 (11") Also used on Parts Key Nos. 1 through 6 Prior Spec F              |
|   | 336A337  | 1           | Distributor to Coll-Parts Key Nos. 1 through 5 Begin Spec F. (5-1/4").                                      |
|   | 336A332  | 1           | High Water Temperature Cut Off to Coll (Optional on Unhoused Units) 18-1/2" with shielding and 4 terminals. |
|   | 336A980  | 1           | Condenser, Distributor - Ignition.  |
|   | 312A10   | 1           |   |

FIG. 16 - FAIRBANKS MORSE MAGNETO PARTS GROUP

NOTE: These parts DO NOT apply for WICO Magneto.

|   |         |   |   |
|---|---------|---|---|
|   | 161-162 | 1 | Magneto Assembly, Fairbanks Morse - Vertically Mounted, Offset Forked Coupling Driven, Integrally Shielded, and Impulse Coupling (FBM)#FM-XVE4C69A. |
| 1 | 161-165 | 1 | Block, Magneto Distributing - (FBM)C2474E.  |

| REF. NO.  | PART NO.    | QUANT. USED | DESCRIPTION  |
|---|-------------|-------------|--|
| FIG. 16 - FAIRBANKS MORSE MAGNETO PARTS GROUP (Cont.) |             |             |  |
|   | (FBM)8S8D   | 4           | Screw, Distributing Block - #8-32 x 1/2".                |
| 2   | (FBM)A983B  | 1           | Lead and Suppressor Assembly, High Tension.              |
| 3   | (FBM)C8120  | 1           | Clip, Magneto Coil.                                      |
| 4   | (FBM)C2430A | 1           | Cap, End - Includes (2) Vent Hoods and Screens.          |
|   | (FBM)10S8D  | 2           | Screw, End Cap.  |
|   | 161-120     | 2           | Screw, End Cap - (FBM)10S10D.                            |
| 5   | (FBM)B6340  | 1           | Seal, Bearing Support Felt.                              |
| 6   | 161A42      | 1           | Gasket, End Cap to Frame (FBM)K2498.                     |
| 7   | (FBM)GZ2425 | 1           | Frame, Magneto.  |
| 8   | (FBM)S2477C | 1           | Coil, Magneto - Replaces (FBM)H2477C.                    |
|   | (FBM)6S3N   | 1           | Screw, Coil Clip - #6-32 x 3/16".                        |
|   | 161-47      | 1           | Washer, Lock - Magneto Coil Clip Screw - #6 - (FBM)6LW1. |
|   | 615-65      | 2           | Set screw, Magneto Coil Bridge - (FBM)25SS12A.           |
| 9   | 161P71      | 1           | Bearing, Ball - Magnetic Rotor Drive End - (FBM)B5949.   |
| 10  | 161-34      | 1           | Washer, Rotor Shaft Seal - Inner (FBM)C2492.             |
| 11  | 181-128     | 1           | Washer, Rotor Shaft Seal - Outer (FBM)A2492A.            |
| 12  | 161-122     | 1           | Disc, Oil Slinger Baffle - (FBM)E2303.                   |
| 13  | (FBM)E5963  | 2           | Spring, Impulse Coupling Pawl.                           |
| 14  | (FBM)YY2563 | 1           | Hub, Impulse Coupling - Includes E5963 Springs.          |
| 15  | 161-51      | 1           | Spring, Impulse Coupling Drive - (FBM)D2565.             |
| 16  | 161-94      | 1           | Washer, Lock - Impulse Coupling Nut - (FBM)A5931B.       |
| 17  | (FBM)B5950  | 2           | Bearing, Drive.  |
| 18  | (FBM)F2624  | 1           | Shaft Assembly, Drive.                                   |
| 19  | (FBM)D2871  | 1           | Housing and Bearing Assembly, Drive.                     |
| 20  | (FBM)D2671C | 1           | Housing and Shaft Assembly, Drive.                       |
|   | (FBM)25S8C  | 4           | Screw, Drive Housing - 1/4-20 x 1/2".                    |
| 21  | (FBM)D2569  | 1           | Washer, Drive Shaft Thrust.                              |
| 22  | (FBM)L1515  | 1           | Drive Member.  |
| 23  | (FBM)D5931D | 1           | Pin, Drive.  |
| 24  | (FBM)K2570  | 1           | Nut, Impulse Coupling.                                   |
| 25  | 161-133     | 1           | Key, Rotor to Impulse Coupling (FBM)3K1.                 |

| REF. NO.  | PART NO.     | QUANT. USED | DESCRIPTION  |
|---|--------------|-------------|--|
| FIG. 16 - FAIRBANKS MORSE MAGNETO PARTS GROUP (Cont.) |              |             |  |
| 26  | (FBM)QZ2563C | 1           | Coupling Assembly, Impulse - Includes YY2563 Hub, D2565 Spring and GY5957 Shell.   |
| 27  | (FBM)GY5957  | 1           | Shell, Impulse Coupling.   |
| 28  | (FBM)S2566   | 1           | Pin, Stop - Impulse Coupling Pawl.   |
| 29  | 161-62       | 1           | Seal, Magnetic Rotor Shaft - (FBM)G3861.   |
| 30  | (FBM)A6304   | 1           | Seal, Bearing Oil.   |
| 31  | 161-56       | 1           | Shim, Magnetic Rotor Shaft - (FBM)C2723.   |
| 32  | (FBM)D2492   | 1           | Washer, Spacer - Ball Bearing to Seal - (Opposite Drive End).                      |
| 33  | (FBM)PW2460  | 1           | Rotor Assembly, Magnetic.  |
| 34  | (FBM)E6304A  | 1           | Seal, Magnetic Rotor Bearing.  |
| 35  | (FBM)C5949A  | 1           | Bearing, Ball - Rotor (Opposite Drive End).  |
| 36  | (FBM)A2636   | 1           | Plate, End Cap.  |
|   | (FBM)10S6G   | 2           | Screw, End Cap - Plate - #10-24 x 3/8".  |
| 37  | 181-16       | 1           | Guide, Primary Ground Strip - (FBM)B1355.  |
|   | 612-63       | 1           | Screw, Primary Ground - #6-32 x 1/2" (FBM)6S6N.                                    |
|   | 161-46       | 1           | Nut, Primary Ground - #6-32 - (FBM)6N1.  |
|   | (FBM)6LW1    | 1           | Washer, Lock - Primary Ground.   |
| 38  | (FBM)H2457A  | 1           | Bushing, Primary Ground Insulating.  |
| 39  | 161-37       | 2           | Washer - (1) Contact Support Locking Screw Plate, (1) Primary Ground - (FBM)D2458. |
| 40  | (FBM)U2514   | 1           | Strip, Primary Ground.   |
|   | 161A163      | x           | Stud Assembly, Magneto Stop - REFER TO IGNITION GROUP.                             |
| 44  | 161P164      | 1           | Nut, Knurled - Available also as part of Stop Stud Assembly.                       |
| 46  | (FBM)B1232   | 2           | Hood, Vent.  |
|   | (FBM)6S6N    | 2           | Screw, Hood Vent - #6-32 x 3/8".   |
| 47  | 161-81       | 2           | Screen, Vent - (FBM)A6032A.  |
| 48  | 161-38       | 1           | Brush and Spring Assembly - (FBM)E2460B.   |
| 49  | 161-60       | 1           | Rotor, Distributing - (FBM)M2765.  |
| 50  | (FBM)B3937   | 4           | Terminal, High Tension Cable - Part of Cable Assembly.                             |
| 51  | 161P182      | 1           | Condenser, Magneto Ignition - (FBM)M2433.  |
|   | (FBM)8S6D    | 1           | Screw, Condenser Mounting - #8-32 x 3/8".  |
| 52  | (FBM)B1496G  | 1           | Ring, Snap- Fulcrum Pin.   |
| 53  | (FBM)F2786   | 1           | Wick and Holder Assembly, Cam Felt.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 16 - FAIRBANKS MORSE MAGNETO PARTS GROUP (Cont.)

|    |            |   |  |
|----|------------|---|--|
| 54 | 525-3      | 1 | Washer, Contact Support Locking Screw - (FBM)B5989.                |
| 55 | 161-88     | 1 | Terminal, Lead Wire - For #8 Screw - (FBM)A4361.                   |
| 56 | 161-168    | 1 | Point Set, Ignition Contact - Fairbanks Morse Magneto (FBM)A2437A. |
|    | (FBM)6S5N  | 1 | Screw, Breaker Arm Terminal - #6-32 x 5/16".                       |
|    | 161-116    | 1 | Washer, Lock - Breaker Arm Terminal Screw - #6 - (FBM)6LW2.        |
|    | (FBM)6S8N  | 1 | Screw, Contact Support Locking - #6-32 x 3/8".                     |
|    | 161-116    | 1 | Washer, Lock - Contact Support Locking Screw - #6 - (FBM)6LW2.     |
|    | (FBM)8S8N  | 1 | Screw, Contact Support Locking - #8-32 x 3/8".                     |
|    | 850-25     | 1 | Washer, Lock - Contact Support Locking - (FBM)8LW3.                |
| 57 | (FBM)L2788 | 1 | Wick, Felt - Breaker Arm.  |
| 58 | (FBM)U4631 | 1 | Support, Bearing.  |
|    | (FBM)8S6D  | 4 | Screw, Bearing Support - #8-32 x 3/8".                             |
|    | 167A57     | 4 | Nut, Coupling - Spark Plug Cable to Magneto.                       |

FIG. 17 - COOLING SYSTEM AND MOUNTING CUSHION GROUP

|    |         |   |   |
|----|---------|---|---|
| 1  |         |   | Radiator -  |
|    | 130-285 | 1 | Parts Key Nos. 1 through 5.   |
|    | 130C344 | 1 | Parts Key No. 6.  |
| 2  |         |   | Cap, Radiator -   |
|    | 130-290 | 1 | Parts Key Nos. 1 through 5 Prior to Spec F.   |
|    | 130P401 | 1 | Parts Key Nos. 1 through 5 Begin Spec F.  |
|    | 130P364 | 1 | Parts Key No. 6.  |
| 2A | 130-245 | 1 | Gasket, Radiator Cap - Parts Key No. 6 (and Parts Key Nos. 1 through 5 Begin Spec F). |
| 3  | 503B203 | 1 | Hose, Radiator - Upper - 1-1/2" I.D. - Inlet.   |
| 4  | 503B204 | 1 | Hose, Radiator - Lower - 1-1/2" I.D. - Outlet.  |
| 5  | 511-20  | 1 | Belt, Fan - 46-1/2".  |
| 6  |         |   | Clamp, Radiator Hose -  |
|    | 503-11  | 4 | Parts Key No. 6 (Also Parts Key Nos. 1 through 5 Prior to Spec F).                    |
|    | 503-129 | 4 | Parts Key Nos. 1 through 5 Begin Spec F.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 17 - COOLING SYSTEM AND MOUNTING CUSHION GROUP (Cont.)

|    |                |   |   |
|----|----------------|---|---|
| 7  | 130B343        | 1 | Fan Only, Cooling - 4 Blades, Pusher Type.  |
| 8  |                |   | Valve, Drain - Radiator -   |
|    | 504-6          | 1 | Parts Key No. 6 (Also Parts Key Nos. 1 through 5 Prior to Spec F).                          |
|    | 504-3          | 1 | Parts Key Nos. 1 through 5 Begin Spec F.  |
| 9  | 130A11         | 1 | Pad, Radiator Mounting - Parts Key No. 6 (Also Parts Key Nos. 1 through 5 Prior to Spec F). |
| 10 |                |   | Bushing, Reducer - Drain Valve -  |
|    | 505-7          | 1 | Parts Key No. 6 (Also Parts Key Nos. 1 through 5 Prior to Spec F) 1/4 to 1/8" Pipe.         |
|    | 505-18         | 1 | Parts Key Nos. 1 through 5 Begin Spec F (1/2 to 1/4" Pipe).                                 |
| 11 | 402-27         | 2 | Mount, Rubber - Generator.  |
| 12 | 402A68         | 1 | Pin, Engine Mounting - 4-3/8" Long with 5/8-18 Thread.                                      |
|    | 870-59         | 1 | Nut, Castellated - 5/8-18 Thread.   |
| 13 | 402-10         | 1 | Mount, Rubber - Upper.  |
| 14 | 402-11         | 1 | Mount, Rubber - Lower.  |
| 15 | 402-12         | 1 | Cup, Rubber Mount Retainer.   |
|    | (CO)C400B-229  | 2 | Washer, Plain - 11/16, 3/32 Thick - Lower Mounting Rubber.                                  |
|    | (CO)X-4584     | 1 | Stud, 5/8-18 x 4-3/8" Long (Drilled) Gear Cover to Front Motor Support.                     |
|    | (CO)X-18068    | 1 | Nut, 5/8-18 x 5/8 High (Slotted) Gear Cover to Front Motor Support.                         |
|    | (CO)X-14191    | 2 | Washer, Plain - 5/8 x 2-1/4 x 1/8" - Gear Cover to Upper Mount.                             |
|    | (CO)X-607      | 1 | Pin, Cotter - 1/8 x 1-1/2" Long - Gear Cover to Front Motor Support Stud.                   |
|    | (CO)F162E-5011 | 1 | Manifold, Engine Exhaust - Water Cooled.  |
|    | 504-19         | 1 | Valve, Water - Lockshield.  |
|    | 504-20         | 1 | Key, Water Valve.   |
|    | 110A526        | 2 | Bracket and Nipple Assembly (1) Water Inlet, (1) Water Outlet.                              |
|    | 307-182        | 1 | Valve, Solenoid Water - 12 Volt.  |
|    | 110A528        | 1 | Bracket, Manifold Water Pipe.   |
|    | 504-11         | 1 | Valve, Water By-Pass Regulator.   |
|    | 110A522        | 2 | Plug, Adapter (1) Water Pump Hose, (1) Water Outlet Hose.                                   |

\* - These optional parts are used only with certain plants which are adapted to cooling by passing fresh water (city water) through the engine as necessary when ventilation is inadequate. Pipe fittings, hose and clamps which are usually available locally are not listed. Consult your dealer if conversion to City Water Cooling is desired.



| REF. NO.  | PART NO.      | QUANT. USED | DESCRIPTION  |
|---|---------------|-------------|--|
| FIG. 18 - STARTING MOTOR AND BATTERY CHARGE GENERATOR GROUP |               |             |  |
| 1   |               |             | Motor Starting - <span style="float: right;">387-98</span>                                   |
|   | 191B7         | 1           | Parts Key Nos. 1 through 5   |
|   | 191C314       | 1           | Prior to Spec "G" (Autolite #MAY-4147) 12 Volt - Includes Start Solenoid (AL) SS-4204.       |
|   | 191P86        | 1           | Begin Spec "G" (Autolite #EO-16582) 12 Volt - Does not include Start Solenoid Relay.         |
| 2   |               |             | Parts Key No. 6 (Autolite #MZ-4178) 8 Volt - Includes Start Solenoid (AL) SS-4001C.          |
|   | 191A78        | 1           | Adapter, Starter Spacing -   |
|   | 191A78        | 1           | Parts Key Nos. 1 through 5.  |
| 3   |               |             | Parts Key No. 6.   |
|   |               |             | Generator, Battery Charging -  |
|   | 191C8         | 1           | Parts Key Nos. 1 through 5   |
|   | 191C315       | 1           | Prior to Spec "G" (Autolite #GEF-4806) 12 Volt (Does not include Pulley).                    |
|   | 191P85        | 1           | Begin Spec "G" (Autolite #GJO-71525) 12 Volt (Does not include Pulley).                      |
| 3A  |               |             | Parts Key No. 6 (Autolite #GHD-8001-Q1) 6 Volt (Includes Regulator and Pulley).              |
|   | 191P11        | 1           | Pulley, Charge Generator - Parts Key Nos. 1 through 5.                                       |
|   | 191A317       | 1           | Prior to Spec "G".   |
| 4   | (CO)F400M-301 | 1           | Begin Spec "G" (Autolite #SP-1949).  |
| 5   | 232A230       | 1           | Bracket, Generator Mounting.   |
| 6   | 232A234       | 1           | Arm, Generator Belt Adjusting.   |
| 7   |               |             | Spacer, Generator Mounting.  |
|   |               |             | Regulator, Charge -  |
|   | 191-21        | 1           | Parts Key Nos. 1 through 5.  |
|   | 191B316       | 1           | Prior to Spec "G" (Autolite #VRS-4010A) 12 Volt.   |
|   | 191P118       | 1           | Begin Spec "G" (Autolite #VBO-8201B-1) 12 Volt.  |
| 8   | 331A29        | 1           | Parts Key No. 6 (Autolite #VRR-4104A) 6 Volt (Included with #191P85).                        |
| 9   |               |             | Clamp, Pipe - Mounting Hand Crank.   |
|   | 416A1         | 1           | Cable, Battery Jumper - Parts Key Nos. 1 through 5 - Select length required -                |
|   | 416A4         | 1           | 5" Long.   |
| 10  |               |             | 6-3/4" Long.   |
|   | 416A49        | As Req.     | Cable, Battery Positive and Negative - Parts Key Nos. 1 through 6 - Select length required - |
|   | 418A21        | As Req.     | 14" Long.  |
|   | 416A77        | As Req.     | 20-1/2" Long.  |
|   | 416A37        | As Req.     | 28" Long (Replaces 24" Cable).   |
|   |               |             | 48" Long.  |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION   |
|---|----------|-------------|---|
| FIG. 18 - STARTING MOTOR AND BATTERY CHARGE GENERATOR GROUP (Cont.)                     |          |             |   |
| 11  | 192B4    | 1           | Crank, Engine Hand.   |
| 12  | 191P293  | 1           | Relay, Start Solenoid - Begin Spec "G" Parts Key Nos. 1 through 5 (Delco #1116963).                                 |
| 13  | 307A546  | 1           | Bracket, Start Solenoid Relay Mounting.   |
| (CO)X-19002   |          | 5           | Stud, Charge Generator Bracket to Crankcase (3/8-18 x 1-1/4").  |
| (CO)X-1802-G  |          | 6           | Nut, Charge Generator Bracket to Crankcase (3/8" - 18).   |
| 191-16  |          | 1           | Brush Set, Charging Generator - Parts Key Nos. 1 through 5.   |
| (AL)GBW-45  |          | 2           | Spring, Brush - Charging Generator - Parts Key Nos. 1 through 5.  |
| 191-17  |          | 1           | Brush Set, Starting Motor (AL) MAY-2012AS - Parts Key Nos. 1 through 5.   |
| (AL)MZ-19   |          | 4           | Spring, Brush - Starting Motor - Parts Key Nos. 1 through 5.  |
| 312A15  |          | 2           | Condenser - 0.1 Mfd. - Suppression - (1) Charge Generator to Ground, (1) Charge Regulator to Ground (Begin Spec E). |
| FIG. 19 - HOUSING GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) |          |             |   |
| 1   | 403D121  | 1           | Chassis, Mounting.  |
| 2   | 405C237  | 1           | Panel, Chassis Rear End.  |
| 3   | 405B321  | 3           | Grille, Ventilating -   |
| 4   | 405B293  | 2           | (1) Front, (1) Rear, and (1) Left Hand Front (Carburetor) Side.   |
| 4A  | 405B745  | 1           | (1) Left Rear, and (1) Right Rear.  |
| 5   | 405C236  | 1           | (1) Right Hand Front (Opposite Carburetor) Side.  |
| 6   | 405C234  | 1           | Support, Battery and Fuel Tank.   |
| 7   | 405C240  | 1           | Panel -   |
| 8   | 405D916  | 1           | Front End (Radiator Grille).  |
| 9   | 405D378  | 1           | Rear End - Includes Door.   |
| 10  | 405C375  | 1           | Right Door - Includes Handles.  |
| 11  | 405C148  | 2           | Left Door - Includes Handles.   |
| 12  | 405C211  | 2           | Housing Top.  |
| 13  | 406-2    | 2           | Casting, Top End.   |
| 14  | 406-90   | 1           | Cover, Top End Casting.   |
| 15  | 406-88   | 1           | Clip, Latch - Top End Casting Cover.  |
| 16  | 416B282  | 1           | Knob -  |
|   |          |             | Top End Casting Cover (attaches with machine screws).   |
|   |          |             | Panel Door (attach with #12A x 1-1/2" S.M.S.) Use #406-2 Knob.  |
|   |          |             | Catch, Panel Door (Use only with #406-90 Knob).   |
|   |          |             | Tray, Battery.  |

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 19 - HOUSING GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) Cont.

|    |         |   |   |
|----|---------|---|---|
| 17 | 416B281 | 1 | Frame, Battery Hold Down.   |
| 18 | 520A459 | 2 | Stud, Battery Hold Down.  |
| 19 | 418A239 | 2 | Spacer, Battery Tray Runner.  |
| 20 | 418A290 | 1 | Rod, Battery Tray Guide.  |
| 21 | 408A9   | 4 | Handle, Door Panel.   |
| 22 | 405C714 | 1 | Support, Engine Mounting.   |
| 23 | 130C402 | 1 | Guard, Fan - 1 Piece (Replaces 2 piece guards used previously).                 |
| 24 | 232C934 | 1 | Duct, Air - Generator Exhaust.  |
| 25 | 130B121 | 1 | Plate, Muffler Baffle.  |
| 26 | 305B139 | 1 | Bracket, Regohm AC Voltage Regulator Mounting.                                  |
| 27 | 159A158 | 1 | Cover, Fuel Tank Neck Hole (Used only on Plants that DO NOT have mounted tank). |
| 28 |         |   | Bar, Slide -  |
|    | 406A28  | 8 | (3) Left Panel, (3) Right Panel.  |
|    | 406A27  | 1 | Left Panel.   |
|    | 408A28  | 1 | Right Panel.  |
| 29 |         |   | Plate, Pivot - Slide Bars -   |
|    | 406A13  | 1 | Left Panel - Rear.  |
|    | 406A15  | 1 | Left Panel - Front.   |
|    | 406A14  | 1 | Right Panel - Rear.   |
|    | 408A16  | 1 | Right Panel - Front.  |
| 30 | 405A249 | 4 | Spring, Pivot Plate.  |

FIG. 19A - HOUSING GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)

|   |          |   |  |
|---|----------|---|--|
|   |          |   | Chassis, Mounting -                          |
| 1 | 403D476  | 1 | Front Section.                               |
| 2 | 403D477  | 1 | Rear Section.                                |
|   |          |   | Panel -                                      |
| 3 | 405D1079 | 1 | Front End (Radiator Grille).                 |
| 4 | 405D1080 | 1 | Rear Door.                                   |
| 5 | 405D1081 | 1 | Rear End - Does NOT include door.            |
| 6 | 405D1082 | 1 | Housing Top.                                 |
| 7 | 405D1084 | 2 | Housing Side - Includes hold down fasteners. |

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 19A - HOUSING GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F) Cont.

|    |          |   |   |
|----|----------|---|---|
| 8  | 130B396  | 1 | Support, Radiator Mounting.                                   |
| 9  | 130B397  | 2 | Bracket, Radiator.  |
| 10 | 232B1345 | 2 | Spacer, Generator Mounting.                                   |
| 11 | 130C402  | 1 | Guard, Fan - 1 Piece.   |
| 12 | 336A476  | 1 | Cable, Ground Strap.  |
| 13 | 405-2    | 1 | Knob, Rear Door Panel.  |
| 14 | 416B407  | 1 | Tray, Battery.  |
| 15 | 416B406  | 1 | Frame, Battery Hold-Down.                                     |
| 16 | 520A435  | 2 | Stud, Battery Hold-Down Frame.                                |
| 17 | 403A373  | 1 | Plate, Chassis - 9-1/2 x 9" - For mounting load wire conduit. |

FIG. 19B - HOUSING GROUP - DC MAGNET USE PLANTS (PARTS KEY NO. 6)

|    |         |   |   |
|----|---------|---|---|
| 1  | 403D317 | 1 | Base, Mounting.   |
| 2  | 403D318 | 1 | Channel, Rear Base.   |
| 3  |         |   | Support, Battery and Fuel Tank -                                |
|    | 159D483 | 1 | 15,000 Watt Plants (15HQ-150R/).                                |
|    | 159D484 | 1 | 10,000 Watt Plants (10HQ-150R/).                                |
| 4  | 416B335 | 1 | Frame, Battery Hold-Down.                                       |
| 5  | 520A438 | 2 | Stud, Battery Hold-Down Frame.                                  |
|    |         |   | Panel -   |
| 8  | 405B962 | 2 | Side Door.  |
| 7  | 405D907 | 1 | Front End.  |
| 8  | 405B913 | 1 | Housing Top.  |
| 9  | 405D908 | 1 | Rear End.   |
| 10 | 130C402 | 1 | Guard, Fan - 1 Piece (Replaces 2 piece guards used previously). |
|    |         |   | Bracket, Radiator Support -                                     |
| 11 | 130B346 | 1 | Lower.  |
| 12 | 130A345 | 2 | Upper.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 19B - HOUSING GROUP - DC MAGNET USE PLANTS (PARTS KEY NO. 6) NOT ILLUSTRATED (Cont.)

|    |         |         |   |
|----|---------|---------|---|
| 13 | 405B911 | 1       | Plate, Rear End Housing.                                  |
| 14 | 508P60  | 1       | Grommet, Rubber - Battery Cable Hole in Base.             |
| 15 | 159A322 | 1       | Plug, Housing Crank Hole.                                 |
| 16 | 406A105 | 4       | Fastener, Housing Hold-Down.                              |
|    | 870-106 | As Req. | Nut, Tinnerman Speed - "J" Type.                          |
| 17 | 330A39  | 1       | Cover, Generator Output Leads (Fastens to Mounting Base). |

FIG. 20 - MOUNTING GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F)

|    |         |   |   |
|----|---------|---|---|
| 1  | 405C492 | 1 | Casting, Radiator Top.<br>Panel -       |
| 2  | 130C264 | 1 | Radiator Left Side (Carburetor Side).   |
| 3  | 130C265 | 1 | Radiator Right Side.                    |
| 4  | 405C772 | 1 | Left Side Mounting.                     |
| 5  | 405C777 | 1 | Right Side Mounting.                    |
| 6  | 405C780 | 1 | Lower Front.                            |
| 7  | 405C781 | 1 | Grille, Radiator Front.<br>Guard, Fan - |
| 8  | 130C266 | 1 | Left Side.                              |
| 9  | 130C267 | 1 | Right Side.<br>Support -                |
| 10 | 405C496 | 1 | Radiator Mounting.                      |
| 11 | 405C499 | 1 | Engine Mounting.                        |
| 12 | 405C500 | 1 | Generator Mounting.                     |
| 13 | 405C491 | 1 | Cover, Radiator Fill.                   |
| 14 | 232C934 | 1 | Duct, Air - Generator Adapter.          |
| 15 | 336A476 | 1 | Cable, Ground Strap.                    |
| 16 | 406-2   | 1 | Knob, Radiator Fill Cover.              |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 20A - MOUNTING GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)

|    |          |   |                                |
|----|----------|---|--------------------------------|
| 1  | 403D476  | 1 | Chassis, Mounting.<br>Trim -   |
| 2  | 403C478  | 1 | Right Side Chassis.            |
| 3  | 403C479  | 1 | Left Side Chassis.             |
| 4  | 405D1089 | 1 | Front End Panel.               |
| 5  | 405D1079 | 1 | Panel, Front End.              |
| 6  | 130B396  | 1 | Support, Radiator Mounting.    |
| 7  | 130A397  | 2 | Bracket, Radiator.             |
| 8  | 232B1345 | 2 | Spacer, Generator Mounting.    |
| 9  | 130C402  | 1 | Guard, Fan - 1 Piece.          |
| 10 | 336A476  | 1 | Cable, Ground Strap.           |
| 11 | 416B407  | 1 | Tray, Battery.                 |
| 12 | 416B406  | 1 | Frame, Battery Hold-Down.      |
| 13 | 520A435  | 2 | Stud, Battery Hold-Down Frame. |

FIG. 21 - VOLTAGE REGULATOR GROUP (12 VOLT CRANKED PLANTS) - PARTS KEY NOS. 1 THROUGH 5

|   |         |   |   |
|---|---------|---|---|
| 1 | 305P59  | 1 | Plug-In Unit, Voltage Regulator.          |
| 2 |         |   | Rheostat, Voltage Regulator - Model "H" - |
|   | 303-64  | 1 | Prior to Spec E (500 Ohm).                |
|   | 303-65  | 1 | Begin Spec E (250 Ohm).                   |
| 3 | 303-32  | 1 | Knob, Rheostat.                           |
| 4 | 305C137 | 1 | Base Assembly, Regulator.                 |
| 5 | 312A15  | 1 | Condenser, Suppression - 0.1 Mfd.         |
|   | 305A144 | 4 | Spacer, Regulator Mounting.               |
|   | 508-31  | 4 | Grommet, Rubber - Regulator Mounting.     |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F)

NOTE: Voltage Regulator appears in separate group.

|    |              |         |  |
|----|--------------|---------|--|
| 1  | 301C981      | 1       | Panel Only - Engine Control Half -                                 |
|    | 301C1455     | 1       | Prior to Spec E.   |
| 2  |              |         | Spec E Only.   |
|    | 301C884 mod. | 1       | Panel Only - AC Meter Half -                                       |
|    | 301C884      | 1       | Parts Key No. 1 Prior to Spec D (115 Volt only).                   |
|    | 301C1391     | 1       | Parts Key No. 1 Prior to Spec D (except 115 Volt).                 |
|    | 301C1377     | 1       | Parts Key No. 1 - Spec D and E (115 Volt only).                    |
| 2A | 301C934      | 1       | Parts Key No. 1 - Spec D and E (except 115 Volt).                  |
|    | 301C1376     | 1       | Parts Key Nos. 2 through 5 Prior to Spec D.                        |
| 3  | 322-5        | 1       | Parts Key Nos. 2 through 5 - Spec D and E.                         |
| 4  | 193B35       | 1       | Receptacle, Panel Light.   |
| 5  | 193B36       | 1       | Gauge, Engine Oil Pressure - Panel Unit - Includes Clamp.          |
| 6  |              | 1       | Gauge, Water Temperature - Panel Unit - Includes Clamp.            |
|    | 302-40       |         | Voltmeter - AC (Select according to rating) -                      |
|    | 302-41       |         | 0-150.   |
|    | 302-42       |         | 0-300.   |
| 7  |              |         | 0-500.   |
|    | 302-144      | As Req. | Ammeter - AC (Select according to rating) -                        |
|    | 302-159      |         | 0-20.  |
|    | 302-124      |         | 0-25.  |
|    | 302-118      |         | 0-35.  |
|    | 302-9        |         | 0-50.  |
|    | 302-11       |         | 0-75.  |
|    | 302-126      |         | 0-100.   |
|    | 302B13       |         | 0-140.   |
| 8  | 302P60       | 1       | 0-200.   |
| 9  | 193A11       | 1       | Ammeter, Charge (20-0-20).   |
| 10 | 193P30       | 1       | Gauge, Fuel - Panel Unit (Listed also in Mounted Fuel Tank Group). |
|    |              |         | Divider, Voltage.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) Cont.

|     |         |   |   |
|-----|---------|---|---|
| 11  | 308-90  | 1 | Switch, Start-Stop (Not used on some early Spec "A" plants).                      |
| 11A | 308-9   | 1 | Switch, Start-Stop (Used only on some early Spec "A" plants).                     |
| 12  | 301A974 | 1 | Bracket, Start-Stop Switch Mounting (Not used with early type switch Ref. 11A).   |
| 13  |         |   | Breaker, Circuit - 5 Amp -  |
|     | 320-54  | 1 | Parts Key Nos. 2 through 5 Prior to Spec D (Three pole, WESTINGHOUSE).            |
|     | 320-55  | 1 | Parts Key No. 1 Prior to Spec D (Two pole, WESTINGHOUSE).                         |
|     | 320B97  | 1 | Parts Key Nos. 2 through 5 Spec D and E (Three pole, rear connected, HEINEMANN).  |
|     | 320B96  | 1 | Parts Key No. 1 Spec D and E (Two pole, rear connected, HEINEMANN).               |
| 14  |         |   | Switch, Toggle -  |
|     | 308B68  | 1 | Spec B plants Prior to Serial #503547 (Regulator On-Rheostat On).                 |
|     | 308B68  | 1 | Prior to Spec E (Hand Crank - Remote).  |
|     | 308P5   | 1 | Begin Spec E (Hand Crank - Remote) Replaces #306P6.                               |
| 15  | 308-2   | 1 | Switch, Panel Light.  |
| 16  | 301A413 | 4 | Spacer, Circuit Breaker Mounting (5/16 x 3/4" Long Brass Tubing) Prior to Spec D. |
| 17  | 308-22  | 1 | Switch, Meter Selector - Parts Key Nos. 2 through 5.                              |
| 18  |         |   | Harness Assembly, Wiring -  |
|     | 338C103 | 1 | Engine to Control Connections -   |
|     | 338C169 | 1 | Prior to Spec E.  |
|     |         |   | Spec E Only.  |
|     | 338A33  | 1 | Remote Terminal Connections -   |
|     | 338A186 | 1 | Prior to Spec E.  |
|     | 338B104 | 1 | Spec E Only.  |
|     | 338B105 | 1 | Rheostat Connections.   |
|     | 338B136 | 1 | Charge Generator Connections.   |
| 19  |         |   | Exciter to Control Connections - Spec E Only.                                     |
|     |         |   | Resistor, Fixed -   |
|     | 304A121 | 1 | As used in Stop Relay Circuit:  |
|     | 304P32  | 1 | Prior to Spec E (10 Ohm).   |
|     |         |   | Spec E Only (15 Ohm).   |
|     | 304-99  | 1 | As used with Optional Running Time Meter:   |
|     | 304-125 | 1 | Parts Key Nos. 1, 2, 3 and 5 (5000 Ohm).  |
|     |         |   | Parts Key No. 4 (15000 Ohm).  |

PARTS LIST

PARTS LIST

65

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) Cont.

|     |         |         |   |
|-----|---------|---------|---|
| 20  |         |         | Clip, Timmerman -   |
|     | 332-49  | 1       | Harness & Starter Cable Fastening.                                      |
|     | 332P51  | 1       | Harness To Battery Rack Fastening.                                      |
|     | 332-50  | 1       | Magneto Stop Lead to Battery Rack Fastening (Prior to Spec E Only).     |
| 21  |         |         | Relay, Stop -   |
|     | 307B116 | 1       | Prior to Spec E.  |
|     | 307B4   | 1       | Spec E only.  |
| 22  |         |         | Block, Terminal - 8 Place -   |
|     | 332-54  | 1       | Prior to Spec E.  |
|     | 332A503 | 1       | Spec E Only.  |
| 23  | 332A510 | 1       | Strip, Block Marker - 8 Place (Marked 4, 6, 6, 7, 8, 9, 10, 11).        |
| 24  |         | As Req. | Transformer, Current (Check Current Transformer Nameplate for rating) - |
|     | 302B145 |         | 20/5 Ratio - Prior to Spec D (Use with 0-20 AC Ammeter).                |
|     | 302B340 |         | 20/5 Ratio - Spec D and E (Use with 0-20 AC Ammeter).                   |
|     | 302B160 |         | 25/5 Ratio - Prior to Spec D (Use with 0-25 AC Ammeter).                |
|     | 302B247 |         | 25/5 Ratio - Spec D and E (Use with 0-25 AC Ammeter).                   |
|     | 302B123 |         | 35/5 Ratio - Prior to Spec D (Use with 0-35 AC Ammeter).                |
|     | 302B255 |         | 35/5 Ratio - Spec D and E (Use with 0-35 AC Ammeter).                   |
|     | 302B117 |         | 50/5 Ratio - Prior to Spec D (Use with 0-50 AC Ammeter).                |
|     | 302B246 |         | 50/5 Ratio - Spec D and E (Use with 0-50 AC Ammeter).                   |
|     | 302B76  |         | 75/5 Ratio - Prior to Spec D (Use with 0-75 AC Ammeter).                |
|     | 302B245 |         | 75/5 Ratio - Spec D and E (Use with 0-75 AC Ammeter).                   |
|     | 302B78  |         | 100/5 Ratio - Spec A through Spec E (Use with 0-100 AC Ammeter).        |
|     | 302B125 |         | 140/5 Ratio - Prior to Spec D (Use with 0-140 AC Ammeter).              |
|     | 302B243 |         | 140/5 Ratio - Spec D and E (Use with 0-140 AC Ammeter).                 |
|     | 302B106 |         | 200/5 Ratio - Spec A thru Spec E (Use with 0-200 Ammeter).              |
| 24A |         |         | Transformer, Potential - Adapts AC Voltage Regulator -                  |
|     | 315B2   | 1       | Parts Key No. 1 (115 Volt Plants only).                                 |
|     | 315B20  | 1       | Parts Key No. 4.  |
|     | 315B21  | 1       | Parts Key No. 5.  |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) Cont.

|     |         |         |   |
|-----|---------|---------|---|
| 25  |         |         | Meter, Running Time - OPTIONAL EQUIPMENT -  |
|     | 302-212 | 1       | 60 Cycle Plants (Replaces #302P68).   |
|     | 302-102 | 1       | 50 Cycle Plants.  |
| 26  | 301C446 | 1       | Panel, Running Time Meter Mounting - Plants with OPTIONAL Meter (Mounts to Housing Rear End Cover). |
| 27  | 322-4   | 1       | Lamp, Pilot Light - 12 Volt.  |
| 28  | 332A19  | As Req. | Stud, Output Terminal - Insulated (3/8-16 x 3-1/4").  |
| 29  | 332A56  | 1       | Stud, Output Terminal - Grounded (3/8-16 x 2-1/2").   |
| 30  | 332A21  | As Req. | Block, Output Terminal.   |
| 31  | 332A23  | As Req. | Bushing, Adapter - Output Terminal Block.   |
| 32  | 332A230 | As Req. | Terminal, Output Stud - Solderless.   |
|     |         |         | Condenser - Output Terminal Suppression - 0.1 Mfd -   |
| 33  | 312A15  | 2       | Parts Key No. 1 (Note: 115 Volt Plants use quantity of 1).  |
|     | 315A58  | 3       | Parts Key No. 2 - Spec E Only.  |
| 34  | 312A22  | 3       | Parts Key Nos. 3 through 5 (Note: Also used on Parts Key No. 2 Prior to Spec E).                    |
| 35  | 304-74  | 1       | Resistor Only, Field Discharge - 2200 Ohm.  |
| 36  | 304B97  | 1       | Resistor Assembly, Globar Field Discharge - Includes Ref. 35 plus Bracket.                          |
| 37  | 307B52  | 1       | Relay, Start-Disconnect (Note: 1 also used for Start Relay Prior to Spec E).                        |
| 38  | 193A37  | 1       | Sender, Water Temperature Gauge - Engine Sending Unit only.   |
| 39  | 193B38  | 1       | Sender, Oil Pressure Gauge - Engine Sending Unit only.  |
| 40  | 309-9   | 1       | Switch, High Water Temperature Cut-Off.   |
| 41  | 309B10  | 1       | Switch, Low Oil Pressure Cut-off - OPTIONAL EQUIPMENT.  |
| 42  | 308A94  | 1       | Switch, Remote Control Start and Stop (Replaces #308-40).   |
| 43  |         |         | Block, Terminal - 4 Place -   |
|     | 332A18  | 2       | Prior to Spec E - (1) Engine Control Panel, (1) AC Meter Panel.                                     |
|     | 332A391 | 2       | Spec E Only - (1) Engine Control Panel, (1) AC Meter Panel.   |
| 43A |         |         | Strip, Block Marker - 4 Place - Spec E Only -   |
|     | 332A574 | 1       | AC Meter Panel (Marked 2, 3, 4, 5).   |
|     | 332A447 | 1       | Engine Control Panel (Marked B+, 1, 2, 3).  |
| 44  | 332A188 | 1       | Block, Terminal - 3 Place - Parts Key No. 1.  |
| 45  | 302A153 | 2       | Spacer, 3 Place Terminal Block Mounting - Parts Key No. 1.  |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION  |
|---|----------|-------------|--|
| FIG. 22 - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 PRIOR TO SPEC F) Cont. |          |             |  |
|   |          |             | Rheostat -   |
| 48  | 303-64   | 1           | Prior to Spec E (500 Ohm. Model "H") Regulator Operation (Listed also in Regulator Group).                                 |
|   | 303-65   | 1           | Spec E Only (250 Ohm. Model "H") Regulator Operation (Listed also in Regulator Group).                                     |
| 47  | 303-31   | 1           | Spec B Plants Prior to Serial #503547 (300 Ohm. Model "K") For Manual Voltage Control.                                     |
|   | 303P83   | 1           | Begin Spec B Serial #503547 (Includes #308P131 Switch) For Manual Voltage Control.   |
| 48  | 303-32   | 2           | Knob, Rheostat (1) Voltage Regulator Rheostat. (1) Manual Voltage Control Rheostat.  |
| 48A   | 308P131  | 1           | Switch, Manual Voltage Control Rheostat - Begin Spec B Serial #503547 (Part of 303P83 Rheostat).                           |
| 49  |          |             | Panel, Transformer Coil Mounting - Bakelite -  |
|   | 302A108  | 1           | Parts Key No. 1 (8-1/2" x 3 x 1/4").   |
|   | 302A109  | 1           | Parts Key Nos. 2 through 5 Prior to Spec D (11 x 3 x 1/4").  |
|   | 302B339  | 1           | Parts Key Nos. 2 through 5 Begin Spec D (11 x 3 x 1/4").   |
| 50  |          |             | Bracket, Transformer Coil Panel Mounting -   |
|   | 302A127  | 2           | Parts Key No. 1 Prior to Spec D.   |
|   | 302A337  | 2           | Parts Key No. 1 Begin Spec D.  |
|   | 302A128  | 2           | Parts Key Nos. 2 through 5 Prior to Spec D.  |
|   | 302B338  | 2           | Parts Key Nos. 2 through 5 Begin Spec D.   |
| 51  | 302A154  | As Req.     | Hook, Transformer Coil Mounting.   |
| 52  | 332A58   | 3           | Stud, 3 Place Terminal Block - (3/8-16 x 2-1/2") Parts Key No. 1.  |
| 53  | 301A1061 | 1           | Cover, Manual Field Rheostat Knob - Used Begin Serial #503547 to approximately Nov. 22, 1954.                              |
| 54  | 302-157  | 1           | Multiplier, Meter - 58,000 Ohm - Parts Key Nos. 4 and 5.   |
| 55  | 308P37   | 1           | Switch, Momentary Contact - Used during manual cranking to remove Low Oil Pressure Cut-Off Switch from circuit - OPTIONAL. |

FIG. 22A - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F)  
NOTE: Voltage Regulator appears in separate group.

|    |          |   |  |
|----|----------|---|--|
| 1  | 301C1808 | 1 | Panel Only, Engine Control Half - Lower. |
|    | 301C1918 | 1 | Spec F only.                             |
|    | 301D1108 | 1 | Begin Spec G.                            |
| 2  |          |   | Box Only, Control.                       |
|    |          |   | Panel Only, AC Output Control - Upper -  |
| 3  | 301C1371 | 1 | Parts Key No. 1.                         |
| 3A | 301C1370 | 1 | Parts Key Nos. 2 through 5.              |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION  |
|--|----------|-------------|--|
| FIG. 22A - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F) Cont. |          |             |  |
| 4  | 322P49   | 1           | Receptacle, Panel Light - Includes Switch.   |
| 5  | 193B107  | 1           | Gauge, Engine Oil Pressure - Panel Unit.   |
| 6  | 193B108  | 1           | Gauge, Water Temperature - Panel Unit.   |
| 7  |          | 1           | Voltmeter - AC (Select according to rating) -  |
|  | 302-40   |             | 0-150.   |
|  | 302-41   |             | 0-300.   |
|  | 302-42   |             | 0-500.   |
| 8  |          | As Req.     | Ammeter - AC (Select according to rating) -  |
|  | 302-144  |             | 0-20.  |
|  | 302-159  |             | 0-25.  |
|  | 302-124  |             | 0-35.  |
|  | 302-116  |             | 0-50.  |
|  | 302-9    |             | 0-75.  |
|  | 302-11   |             | 0-100.   |
|  | 302-126  |             | 0-140.   |
|  | 302B13   |             | 0-200.   |
| 9  | 302A81   | 1           | Ammeter, Charge (30-0-30) Replaces #302P80 (20-0-20).                                |
|  |          |             | Switch, Start-Stop -   |
| 10   | 308-90   | 1           | Spec F only.   |
| 10A  | 308P154  | 1           | Begin Spec G.  |
| 11   | 301A974  | 1           | Bracket, Start-Stop Switch Mounting - Spec F only.                                   |
| 12   |          |             | Breaker, Circuit -   |
|  | 320B98   | 1           | Parts Key No. 1 (Two Pole).  |
|  | 320B97   | 1           | Parts Key Nos. 2 through 5 (Three Pole).   |
| 13   | 308P5    | 1           | Switch, Toggle - Handcrank - Remote.   |
| 14   | 308-22   | 1           | Switch, Meter Selector - Parts Key Nos. 2 through 5.                                 |
| 15   |          |             | Harness Assembly, Wiring -   |
|  | 338C187  | 1           | Engine to Controls Connection.   |
|  | 338B105  | 1           | Charge Generator Connection.   |
|  | 338B138  | 1           | Exciter to Control Connection.   |
| 18   |          |             | Resistor, Fixed -  |
|  | 304P32   | 1           | In Stop Relay Circuit (15 Ohm).  |
|  | 304-99   | 1           | As used with OPTIONAL Running Time Meter for Parts Key Nos. 1, 2, 3, & 5 (5000 Ohm). |
|  | 304-125  | 1           | As used with OPTIONAL Running Time Meter for Parts Key No. 4 (15000 Ohm).            |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION  |
|--|----------|-------------|--|
| FIG. 22A - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F) Cont. |          |             |  |
| 17   | 332-51   | 1           | Clip, Tinnerman - Harness to Battery Rack Fastening.   |
| 18   | 307B4    | 1           | Relay, Stop.   |
|  |          |             | Block, Terminal -  |
| 19   | 332A503  | 1           | 8 Place - Engine Control Panel.  |
| 20   | 332A537  | 1           | 4 Place - Engine Control Panel.  |
| 21   | 332A391  | 1           | 4 Place - AC Output Control Panel.   |
| 22   | 332A513  | 1           | Current Transformer Connection - AC Output Control Panel (Specify Phase and Voltage of Model). |
|  |          |             | Strip, Terminal Block Marker -   |
| 23   | 332A510  | 1           | For 8 Place Block (Marked 4, 5, 6, 7, 8, 9, 10, 11).   |
| 23A  | 332A566  | 1           | For 4 Place Engine Panel Block (Marked B+, 1, 2, 3).   |
| 23B  | 332A524  | 1           | For 4 Place Output Panel Block (Marked F2, AF, FI, AI).  |
| 24   |          |             | As Req. Transformer, Current (Check Current Transformer Nameplate for rating) -                |
|  | 302B340  |             | 20/5 Ratio (Use with 0-20 AC Ammeter).   |
|  | 302B247  |             | 25/5 Ratio (Use with 0-25 AC Ammeter).   |
|  | 302B255  |             | 35/5 Ratio (Use with 0-35 AC Ammeter).   |
|  | 302B246  |             | 50/5 Ratio (Use with 0-50 AC Ammeter).   |
|  | 302B245  |             | 75/5 Ratio (Use with 0-75 AC Ammeter).   |
|  | 302B76   |             | 100/5 Ratio (Use with 0-100 AC Ammeter).   |
|  | 302B243  |             | 140/5 Ratio (Use with 0-140 AC Ammeter).   |
|  | 302B106  |             | 200/5 Ratio (Use with 0-200 AC Ammeter).   |
| 25   |          |             | Meter, Running Time - OPTIONAL EQUIPMENT -   |
|  | 302-212  | 1           | 60 Cycle Plants.   |
|  | 302-102  | 1           | 50 Cycle Plants.   |
| 27   | 322-26   | 1           | Lamp, Pilot Light.   |
|  |          |             | As Req. Clamp, Current Transformer Mounting -  |
| 28   | 302A235  |             | Inside of Coil.  |
| 28A  | 302A236  |             | Outside of Coil.   |
|  |          |             | Condenser - Output Terminal Suppression - 0.1 Mfd.   |
| 29   | 312A15   | As Req.     | Parts Key No. 1 and 2.   |
| 30   | 312A22   | 4           | Parts Key Nos. 3, 4 and 5.   |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION  |
|--|----------|-------------|--|
| FIG. 22A - CONTROL GROUP - HOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5 BEGIN WITH SPEC F) Cont. |          |             |  |
| 31   | 304B97   | 1           | Resistor Assembly, Globar Field Discharge - Includes Ref. 32 and 33.   |
| 32   | 304-74   | 1           | Resistor Only, Field Discharge - 2200 Ohm.   |
| 33   | 304A77   | 1           | Bracket, Field Discharge Resistor Mounting.  |
| 34   | 307B52   | 1           | Relay, Start - Disconnect.   |
| 35   | 307B81   | 1           | Relay, Start Ignition.   |
| 36   | 193A109  | 1           | Sender, Water Temperature Gauge - Engine Sending Unit Only.  |
| 37   | 193B108  | 1           | Sender, Oil Pressure Gauge - Engine Sending Unit Only.   |
| 38   | 309-9    | 1           | Switch, High Water Temperature Cut-Off.  |
| 39   | 309B10   | 1           | Switch, Low Oil Pressure Cut-off - OPTIONAL EQUIPMENT.   |
| 40   | 308A94   | 1           | Switch, Remote Control Start and Stop.   |
| 41   |          |             | Rheostat -   |
|  | 303P83   | 1           | Manual Voltage Control - Includes #308P131 Switch.   |
|  | 303-65   | 1           | Voltage Regulator Operation (Listed also in Regulator Group).  |
| 42   | 308P131  | 1           | Switch, Manual Voltage Control Rheostat.   |
| 43   | 303-32   | 2           | Knob, Rheostat - (1) Voltage Regulator Rheostat, (1) Manual Voltage Control Rheostat.                                      |
| 44   | 301A413  | 4           | Spacer, Meter Selector Switch Mounting - Parts Key Nos. 2 through 5.   |
| 45   | 308P37   | 1           | Switch, Momentary Contact - Used during manual cranking to remove Low Oil Pressure Cut-Off Switch from Circuit - OPTIONAL. |
| 46   | 302-157  | 1           | Multiplar. Meter - 58,000 Ohm - Parts Key Nos. 4 and 5.  |
| 47   | 508P63   | 1           | Grommet, Rubber (2-1/4 x 3-3/8 x 1/4) For 3-3/4" Hole.   |
| 48   | 160A144  | As Req.     | Jumper, Terminal Block (5/16" Copper Strip).   |
| 49   | 301A646  | 1           | Plate, Grounding - Output Terminal Block.  |
| 50   |          |             | Transformer, Potential - Adapts AC Voltage Regulator -   |
|  | 315B2    | 1           | Parts Key No. 1 (115 Volt Plants Only).  |
|  | 315B20   | 1           | Parts Key No. 4.   |
|  | 315B21   | 1           | Parts Key No. 5.   |
| FIG. 22B - CONTROL GROUP - DC MAGNET PLANT - PARTS KEY NO. 6                                     |          |             |  |
| 1  | 301B1121 | 1           | Bracket, Control Mounting.   |
| 2  |          |             | Panel, Control -   |
|  | 201A1055 | 1           | Prior to Spec E.   |
|  | 301A1495 | 1           | Begin with Spec E.   |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION  |
|--|----------|-------------|--|
| FIG. 22B - CONTROL GROUP - DC MAGNET PLANT - PARTS KEY NO. 6 (Cont.) |          |             |  |
| 3  | 330-11   | 1           | Box, Outlet.   |
| 4  | 308-90   | 1           | Switch, Start-Stop - Prior to Spec E.                  |
| 5  | 301A974  | 1           | Bracket, Start-Stop Switch Mounting - Prior to Spec E. |
| 6  | 308A29   | 1           | Switch, Start - Begin with Spec E.                     |
| 7  | 302P60   | 1           | Ammeter, Charge (20-0-20).                             |
| 8  | 332A406  | 1           | Block, Terminal.                                       |
| 9  | 332A426  | 1           | Strip, Block Marker.                                   |
| 10   |          |             | Harness Assembly, Wiring - Engine to Control -         |
|  | 338B146  | 1           | Prior to Spec E.                                       |
|  | 338B184  | 1           | Begin with Spec E.                                     |
| 11   | 308-69   | 1           | Switch, Ignition - Begin with Spec E.                  |
| 12   | 520-526  | 2           | Stud, Control Mounting.                                |
| 13   | 193P6    | 1           | Gauge, Oil Pressure.                                   |
| 14   | 332-48   | 1           | Clip, Tinnerman - Harness to Filter.                   |

FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5)

NOTE: a - Voltage Regulator appears in separate group.

b - Unhoused Plants with OPTIONAL Meter Panel, see Housed Plants Control Group for parts not listed in this group.

|   |          |   |  |
|---|----------|---|--|
| 1 |          |   | Box, Control -   |
|   | 301D888  | 1 | Prior to Spec C.   |
|   | 301D1141 | 1 | Spec C and D.  |
|   | 301D1106 | 1 | Begin Spec E - Parts Key Nos. 1, 2 and 3.                  |
|   | 301D1246 | 1 | Begin Spec E - Parts Key No. 4.                            |
|   |          |   | Panel Only, Control - Upper -                              |
| 2 |          |   | Standard - Plant is NOT equipped with AC Output Ammeters - |
|   | 301C938  | 1 | Prior to Spec C (No provision for Voltmeter).              |
|   | 301C1022 | 1 | Spec C and D (With provision for Voltmeter).               |
|   | 301C1202 | 1 | Begin Spec E - Parts Key Nos. 1, 2 and 3.                  |
|   | 301C1245 | 1 | Begin Spec E - Parts Key No. 4.                            |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION   |
|---|----------|-------------|---|
| FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5) Cont. |          |             |   |
|   |          |             | Panel Only, Control - Upper (Cont.) -   |
| 2A  |          |             | Optional - Plant is equipped with AC Output Ammeters.                                 |
|   | 301D937  | 1           | Parts Key Nos. 2 and 3 Prior to Spec D.   |
|   | 301C1382 | 1           | Parts Key Nos. 2 and 3 - Spec D only.   |
|   | 301C1237 | 1           | Parts Key Nos. 4 and 5 Prior to Spec D.   |
|   | 301C1394 | 1           | Parts Key Nos. 4 and 5 - Spec D only.   |
| 2B  | 301D987  | 1           | Parts Key No. 1 Prior to Spec D.  |
|   | 301C1393 | 1           | Parts Key No. 1 - Spec D only.  |
|   | 301C1371 | 1           | Parts Key No. 1 Begin Spec E.   |
|   | 301C1370 | 1           | Parts Key Nos. 2 through 5 Begin Spec E.  |
| 3   |          |             | Panel, Control - Lower -  |
|   | 301C890  | 1           | Prior to Spec E.  |
|   | 301C1430 | 1           | Spec E only.  |
|   | 301C1608 | 1           | Spec F only.  |
|   | 301C1916 | 1           | Begin Spec G.   |
| 4   |          |             | Bracket, Control Box Mounting -   |
|   |          |             | Left Hand Bracket -   |
|   | 301B925  | 1           | Prior to Spec C.  |
|   | 301B1145 | 1           | Spec C and D.   |
|   | 301D1124 | 1           | Begin Spec E.   |
|   |          |             | Right Hand Bracket -  |
|   | 301B960  | 1           | Prior to Spec C.  |
|   | 301B1144 | 1           | Spec C and D.   |
|   | 301D1125 | 1           | Begin Spec E.   |
| 5   | 302A61   | 1           | Ammeter, Charge (30-0-30) Replaces #302P60 (20-0-20).                                 |
| 6   |          |             | Rheostat -  |
|   | 303-64   | 1           | Prior to Spec E (Voltage Regulator Operation) Listed also in Voltage Regulator Group. |
|   | 303-65   | 1           | Begin Spec E (Voltage Regulator Operation) Listed also in Voltage Regulator Group.    |
|   | 303-31   | 1           | Spec B Plants Prior to Serial #503547 (Field-Manual Control).                         |
|   | 303P83   | 1           | Begin Spec B Serial #503547 (Field-Manual Control) Includes #306P131 Switch.          |
| 7   | 303-32   | 2           | Knob, Rheostat - (1) Regulator Rheostat, (1) Field Rheostat.                          |



| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION  |
|---|----------|-------------|--|
| FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5) Cont. |          |             |  |
| 8   | 308-28   | 1           | Switch, Start-Stop -<br>Spec B Plants Prior to Serial #503547.                         |
| 8A  | 308-90   | 1           | Begin Spec B Serial #503547 through Spec F.  |
| 8B  | 308P154  | 1           | Begin Spec G.  |
| 8C  | 301A074  | 1           | Bracket, Start-Stop Switch Mounting - Begin Spec B Serial #503547 through Spec F.      |
| 9   |          |             | Switch, Toggle (Hand Crank - Remote) -   |
|   | 308-2    | 1           | Prior to Spec E.   |
|   | 308P5    | 1           | Begin Spec E.  |
| 10  | 308B88   | 1           | Switch, Regulator - Rheostat - Spec B Plants Prior to Serial #503547.                  |
| 11  |          |             | Relay -  |
|   | 307B52   | 1           | Start-Disconnect (Note: 1 also used for Start Relay Prior to Spec E).                  |
|   | 307B81   | 1           | Start Ignition - Begin Spec E.   |
| 12  |          |             | Relay, Stop -  |
|   | 307B116  | 1           | Prior to Spec E.   |
|   | 307B4    | 1           | Begin Spec E.  |
| 13  |          |             | Resistor, Fixed -  |
|   |          |             | As used in Stop Relay Circuit:   |
|   | 304A121  | 1           | Prior to Spec E (10 Ohm).  |
|   | 304P32   | 1           | Begin Spec E (15 Ohm).   |
|   |          |             | As used with Optional Running Time Meter:  |
|   | 304-99   | 1           | Parts Key Nos. 1, 2, 3 and 5 (5000 Ohm).   |
|   | 304-125  | 1           | Parts Key No. 4 (15,000 Ohm).  |
| 14  |          |             | As Req. Block, Terminal - Select according to description -                            |
|   | 332A503  |             | 8 Place - 5-15/32" Long (Begin Spec F).  |
|   | 332A532  |             | 5 Place - 3-25/32" Long (Spec E Only).   |
|   | 332A391  |             | 4 Place - 3-7/32" Long (Prior to Spec F).  |
|   | 332A637  |             | 4 Place - 2-1/2" Long (Begin Spec F).  |
|   | 332A406  |             | 3 Place - 2-11/16" Long (Begin Spec E).  |
|   | 332A333  |             | 2 Place - 2-3/32" Long (Potential Transformer) Parts Key Nos. 4 and 5 Prior to Spec F. |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION  |
|---|----------|-------------|--|
| FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5) Cont. |          |             |  |
| 14A   |          |             | As Req. Strip, Terminal Block Marker - Select according to description -   |
|   | 332A510  |             | For 8 Place Block (Marked 4, 5, 6, 7, 8, 9, 10, 11) Begin Spec F.  |
|   | 332A575  |             | For 5 Place Block (Marked 4, 5, 6, 7, 8) Spec E only.  |
|   | 332A447  |             | For 4 Place - 3-7/32" Block (Marked B+, 1, 2, 3) Prior to Spec F.  |
|   | 332A566  |             | For 4 Place - 2-1/2" Block (Marked B+, 1, 2, 3) Begin Spec F.  |
|   | 332A448  |             | For 4 Place Block (Marked 4, 5, 6, 7) Prior to Spec E.   |
|   | 332A530  |             | For 3 Place Block (Marked F2, F1-A1-AF, A2) Begin Spec E.  |
| 15  |          |             | †Transformer, Current - OPTIONAL.  |
| 16  |          |             | †Ammeter, AC - OPTIONAL.   |
| 17  |          | 1           | Voltmeter, AC - Standard Equipment Begin Spec C plants, Optional Equipment Prior Spec C (Select according to rating) - |
|   | 302-40   |             | 0-150.   |
|   | 302-41   |             | 0-300.   |
|   | 302-42   |             | 0-500.   |
| 18  |          | †           | Breaker, Circuit.  |
| 19  |          |             | †Switch, Meter Selector.   |
| 20  |          |             | †Resistor Assembly, Globar Field Discharge.  |
| 20A   |          |             | †Resistor Only, Field Discharge - 2200 Ohm.  |
| 20B   |          |             | †Bracket, Field Discharge Resistor.  |
| 21  |          |             | As Req. Stud, Output Terminal - Prior to Spec E -  |
|   | 332A19   |             | Insulated (3/8-16 x 3-1/4").   |
|   | 332A56   |             | Grounded (3/8-16 x 2-1/2").  |
|   |          |             | Block, Output Terminal -   |
| 22  | 332A21   |             | As Req. Prior to Spec E.   |
| 23  | 332A513  | 1           | Begin Spec E (13-3/8 x 2-1/2") Specify Number of Output holes.   |
| 24  | 332A23   |             | As Req. Bushing, Adapter - Output Terminal Block - Prior to Spec E.  |
|   |          |             | Harness Assembly, Wiring -   |
| 25  | 338B136  | 1           | Exciter to Control Connections.  |
| 26  |          |             | Engine to Control Connections -  |
|   | 338B124  | 1           | Prior to Spec E.   |
|   | 338B168  | 1           | Spec E Only.   |
|   | 338C187  | 1           | Begin Spec F.  |
|   | 338B105  | 1           | Charge Generator Connections.  |

† - See Note "b" at beginning of this group.

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION   |
|---|----------|-------------|---|
| FIG. 23 - CONTROL GROUP - UNHOUSED AC PLANTS (PARTS KEY NOS. 1 THROUGH 5) Cont. |          |             |   |
| 27  | 308A94   | 1           | Switch, Remote Control Start-Stop.  |
| 28  | 193B6    | 1           | Gauge, Oil Pressure -   |
| 28A   | 193B107  | 1           | Prior to Spec F (Mounts on Engine).   |
| 29  | 193B108  | 1           | Begin Spec F (Panel Unit Only).   |
| 30  | 193B109  | 1           | Sender, Oil Pressure Gauge (Engine Sending Unit only) Begin Spec F.                           |
| 31  | 309B10   | 1           | Sender, Water Temperature Gauge (Engine Sending Unit only) Begin Spec F.                      |
| 32  | 308P37   | 1           | Switch, Low Oil Pressure Cut-Off - OPTIONAL Equipment.  |
| 33  | 309A9    | 1           | Switch, Momentary Contact - Plants with Optional Low Oil Pressure Cut-Off Switch.             |
| 34  |          |             | Switch, High Water Temperature Cut-Off - OPTIONAL Equipment.                                  |
|   | 315B2    | 1           | Transformer, Potential (Adapts AC Voltage Regulator) -  |
|   | 315B20   | 1           | Parts Key No. 1 (115 Volt Plants only).   |
|   | 315B21   | 1           | Parts Key No. 4.  |
| 35  | 193B106  | 1           | Parts Key No. 5.  |
| 38  | 302-157  | 1           | Gauge, Water Temperature (Panel Unit only) Begin Spec F.                                      |
| 37  | 301A1061 | 1           | Multiplier, Meter - Parts Key Nos. 4 and 5 (58,000 Ohm).                                      |
|   |          |             | Cover, Manual Field Rheostat Knob - Used Begin Serial #503547 to approximately Nov. 22, 1954. |
| 38  | 312A15   | As Req.     | Condenser, Output Terminal Suppression -  |
|   | 312A17   | 1           | Parts Key Nos. 1, 2 and 3 (0.1 Mfd.).   |
| 39  | 312A22   | 3           | Parts Key Nos. 1, 2 and 3 (0.5 Mfd.).   |
| 40  | 301B1136 | 1           | Parts Key No. 4 (0.1 Mfd.).   |
|   |          |             | Cover, Lead.  |
|   | 302-212  | 1           | Meter, Running Time - OPTIONAL EQUIPMENT (Illustrated with Housed Group) -                    |
|   | 302-102  | 1           | 60 Cycle Plants.  |
|   | 502-20   | 1           | 50 Cycle Plants.  |
|   | 308P131  | 1           | Elbow, Oil Pressure Gauge Sender - Begin Spec F.  |
|   |          |             | Switch, Manual Field Rheostat - Begin Serial #503547.   |

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION                                       |
|--|----------|-------------|---|
| FIG. 24 - GENERATOR GROUP - NON REMOVABLE TYPE EXCITER ARMATURE    |          |             |   |
| Note: This group for Parts Key Nos. 1 through 5 Prior to Spec "C". |          |             |   |
| 1  | *        | 1           | Coil Set, Exciter Field.                          |
| 2  | *        | 4           | Poleshoe, Exciter.                                |
| 3  | 232B630  | 1           | Band, End Bell.                                   |
| 4  |          |             | Cover, Outlet -                                   |
|  | 232A746  | 1           | Housed Plants.                                    |
|  | 232A1038 | 1           | Unhoused Plants.                                  |
| 5  | 232B55   | 1           | Cover, Bearing.                                   |
| 6  | 232B57   | 1           | Gasket, Bearing Cover.                            |
| 7  | 232A615  | 1           | Clip, Bearing - Anti-Rotation.                    |
| 8  | 211D42   | 1           | Bell, End.  |
| 9  | 212C182  | 1           | Rig Assembly, Brush - Includes Brushes & Springs. |
| 10   | *        | 1           | Frame Only, Exciter.                              |
| 11   | *        | 1           | Stator Assembly, Wound.                           |
| 12   | *        | 1           | Rotor Assembly, Wound - Includes Bearing.         |
| 13   | 232B165  | 1           | Scroll, Air.                                      |
| 14   | 205B33   | 1           | Blower, Air.                                      |
| 15   | 231D11   | 1           | Adapter, Generator to Engine.                     |
| 16   | *        | 1           | Band, Alternator Frame - Top.                     |
| 17   | 510A62   | 1           | Bearing, Ball - Double Sealed, Pre-Lubricated.    |
| 18   | *        | 1           | Band, Alternator Frame - Bottom.                  |
| 19   | 232A619  | 2           | Screen, Air Intake.                               |
| 20   | 212B1105 | 8           | Spring, Brush.                                    |
| 21   | 214A46   | 4           | Brush, Slip Ring.                                 |
| 22   | 214A44   | 4           | Brush, Commutator.                                |
| 23   | 403A95   | 1           | Bolt, Lifting Eye.                                |
| 24   | 231D39   | 1           | Adapter, End Bell to Alternator.                  |
| 25   |          |             | Condenser -                                       |
|  | 315A17   | 1           | Commutator Brush (0.5 Mfd.).                      |
|  | 312A15   | 1           | Collector Ring Brush (0.1 Mfd.).                  |

\* - Order these parts by description and furnish complete information from plant nameplate.

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 25 - GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE

Note: This group for Parts Key Nos. 1 through 5 Begin Spec C, and for all Parts Key No. 6.

|     |          |   |  |
|-----|----------|---|--|
| 1   | 231D11   | 1 | Adaptor, Generator to Engine -   |
| 1A  | 231E79   | 1 | Parts Key Nos. 1 through 5 Prior to Spec F.  |
| 1B  | 231D64   | 1 | Parts Key Nos. 1 through 5 Begin Spec F.   |
| 2   | 205B33   | 1 | Parts Key No. 6.   |
| 3   | 232B165  | 1 | Blower, Air.   |
| 4   | *        | 1 | Scroll, Air - Parts Key Nos. 1 through 5.  |
| 5   | 515-130  | 1 | Rotor Assembly, Alternator - Includes Bearing - Parts Key Nos. 1 through 5.            |
| 6   | *        | 1 | Key, Armature to Rotor Shaft - Parts Key Nos. 1 through 5.                             |
| 7   | 510P63   | 1 | Stator Assembly, Wound - Parts Key Nos. 1 through 5.                                   |
| 8   | *        | 1 | Bearing, Ball - Alternator Rotor - Parts Key Nos. 1 through 5.                         |
| 9   | *        | 1 | Band, Alternator Frame - Top - Parts Key Nos. 1 through 5.                             |
| 10  | 212C194  | 1 | Band, Alternator Frame - Bottom - Parts Key Nos. 1 through 5.                          |
| 11  | 232P1186 | 1 | Rig Assembly, Brush - Alternator - Parts Key Nos. 1 through 5.                         |
| 11A | 232A1187 | 1 | Anti-Rotation Device, Bearing - Alternator Rotor Bearing - Parts Key Nos. 1 through 5. |
| 12  | 211E95   | 1 | Spring, Anti-Rotation Device - Parts Key Nos. 1 through 5.                             |
| 13  |          | 1 | Bell, Alternator End - Parts Key Nos. 1 through 5.                                     |
|     | 222A1379 | 1 | Coll Set, Field - Set of 4 Coll -  |
|     | 222A1395 | 1 | Parts Key Nos. 1 through 5 (Exciter).  |
|     | 222A1376 | 1 | Parts Key No. 6 (10,000 Watt Plants) 10HQ.   |
| 14  |          | 1 | Parts Key No. 6 (15,000 Watt Plants) 15HQ.   |
|     |          |   | Shoe, Pole -   |
|     | 221A87   | 4 | Parts Key Nos. 1 through 5 (Exciter) 2-1/2" Stack.                                     |
|     | 221B104  | 4 | Parts Key No. 6 (10,000 Watt Plant) 10HQ (5" Stack).                                   |
|     | 221B106  | 4 | Parts Key No. 6 (15,000 Watt Plant) 15HQ (7-1/2" Stack).                               |
| 14A |          |   | Interpole - Parts Key No. 6 -  |
|     | 221A107  | 4 | 10,000 Watt Plants (10HQ) 3-1/2".  |
|     | 221A105  | 4 | 15,000 Watt Plants (15HQ) 4-1/2".  |
| 15  |          |   | Cover, Hand Hole - Upper Left and Right -  |
|     | 232B1254 | 2 | Parts Key Nos. 1 through 5 (Alternator End Bell).                                      |
|     | 232B1089 | 2 | Parts Key No. 6 (End Bell).  |

\* - Order these parts by description and furnish complete information from plant nameplate.

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION |
|-------------|-------------|----------------|-------------|
|-------------|-------------|----------------|-------------|

FIG. 25 - GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE (Cont.)

|     |          |   |  |
|-----|----------|---|--|
| 16  |          |   | Cover, Hand Hole - Screened -  |
|     | 232A1253 | 2 | Parts Key Nos. 1 through 5 (Alternator End Bell - Lower Left and Right).   |
|     | 232B1093 | 1 | Parts Key No. 6 (End Bell - Lower Right).                                  |
|     | 232B1162 | 1 | Parts Key No. 6 (End Bell - Lower Left).                                   |
| 16A | 234B20   | 1 | Cover, Outlet Lead - Parts Key Nos. 1 through 5 (Alternator End Bell-Top). |
| 17  |          |   | Armature Assembly -  |
|     | 201A623  | 1 | Parts Key Nos. 1 through 5 (60 Cycle Plants).                              |
|     | 201A666  | 1 | Parts Key Nos. 1 through 5 (50 Cycle Plants).                              |
| 17A | 201A657  | 1 | Parts Key No. 6 (10,000 Watt Plants) 10HQ (Includes Bearing).              |
|     | 201A630  | 1 | Parts Key No. 6 (15,000 Watt Plants) 15HQ (Includes Bearing).              |
| 17B | 510A52   | 1 | Bearing, Armature Ball - Parts Key No. 6.                                  |
|     |          |   | Frame Only -   |
| 18  | 210D211  | 1 | Parts Key Nos. 1 through 5 (Exciter).                                      |
| 18A | 210C236  | 1 | Parts Key No. 6 (10,000 Watt Plants) 10HQ.                                 |
|     | 210A226  | 1 | Parts Key No. 6 (15,000 Watt Plants) 15HQ.                                 |
| 19  |          |   | Rig Assembly, Brush - Commutator -   |
|     | 212C197  | 1 | Parts Key Nos. 1 through 5 (Exciter).                                      |
|     | 212C201  | 1 | Parts Key No. 6.   |
| 20  | 212C1141 | 1 | Holder, Brush Rig - Parts Key Nos. 1 through 5 (Exciter Rig).              |
| 21  |          |   | Condenser - Parts Key Nos. 1 through 5 -                                   |
|     | 312A17   | 1 | Parts Key Nos. 1 through 5 (Commutator Brush) 0.5 Mfd.                     |
|     | 312A15   | 1 | Parts Key No. 1 through 5 (Slip Ring Brush) 0.1 Mfd.                       |
| 22  | 211C92   | 1 | Cover, Exciter End - Parts Key Nos. 1 through 5.                           |
| 23  |          |   | Brush, Commutator (DC) -   |
|     | 214A44   | 4 | Parts Key Nos. 1 through 5 (Exciter).                                      |
|     | 214A49   | 4 | Parts Key No. 6.   |
| 24  | 214A46   | 4 | Brush, Slip Ring (AC) Alternator - Parts Key Nos. 1 through 5.             |
| 25  |          |   | Spring, Brush - Constant Pressure Type -                                   |
|     | 212B1105 | 8 | Parts Key Nos. 1 through 5 - (4) Commutator Brush, (4) Slip Ring Brush.    |
|     | 212B1106 | 4 | Parts Key No. 6.   |
| 26  | 232B1205 | 1 | Washer, Armature Centering - Parts Key Nos. 1 through 5.                   |
| 27  | 212A1142 | 4 | Clamp, Brush Rig Mounting (Exciter Rig) Parts Key Nos. 1 through 5.        |

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

FIG. 25 - GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE (Cont.)

|     |          |   |   |
|-----|----------|---|---|
| 28  |          |   | Coil Assembly, Interpole - Set of 2 Coil -                              |
|     | 222A1396 | 1 | Parts Key No. 6 (10,000 Watt Plant) 10HQ.                               |
|     | 222A1377 | 1 | Parts Key No. 6 (15,000 Watt Plant) 15HQ.                               |
| 29  | 211D90   | 1 | Bell, End - Parts Key No. 6.  |
| 30  | 232A601  | 1 | Cover, Bearing - Parts Key No. 6.                                       |
|     |          |   | Screen, Generator Air Outlet (Fastens to Generator to Engine Adapter) - |
| 31  | 232B1116 | 1 | Parts Key No. 6.  |
| 31A | 234B78   | 1 | Parts Key Nos. 1 through 5 Begin with Spec F.                           |
| 32  | 232A615  | 1 | Clip, Armature Bearing Stop - Parts Key No. 6.                          |
| 33  | 403A95   | 1 | Eyebolt, Lifting - OPTIONAL.  |

#### SERVICE KITS & MISCELLANEOUS

|         |               |   |   |
|---------|---------------|---|---|
|         |               |   | *Bearing Kit, Connecting Rod - Upper and Lower - Standard - |
|         | (CO)F400T-155 | 2 | Cylinders 1 and 3.  |
|         | (CO)F400T-159 | 2 | Cylinders 2 and 4.  |
| 185-825 | (CO)F400T-152 | 1 | Complete Engine.  |
|         |               |   | *Bearing Kit, Crankshaft - Upper and Lower - Standard -     |
|         | (CO)F600T-227 | 1 | Front (Includes Thrust Washer and F600G-3491 Bearing).      |
|         | (CO)F600T-223 | 1 | Rear (Same as F600G-3471).                                  |
|         | (CO)F400T-169 | 1 | Center (Same as F400G-3111).                                |
| 185-829 | (CO)F400T-182 | 1 | Complete Engine.  |
|         |               |   | Gasket Kit -  |
|         | 143K60        | 1 | Carburetor Gaskets.   |
|         | 168K58        | 1 | Complete Plant Gaskets.                                     |
|         | (CO)F162U-119 | 1 | Engine only Gaskets (For Complete Plant, see Onan #168K58). |
|         |               |   | Overhaul Kit, Plant - 12 Volt Cranked Plants only -         |
|         | 522K132       | 1 | Specs B, C and D only (Fairbanks Morse Magneto Ignition).   |
|         | 522K167       | 1 | Begin Spec E (Battery Ignition).                            |

\* - Refer to "Oversize and Undersize" Chart.

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION |
|----------|----------|-------------|-------------|
|----------|----------|-------------|-------------|

#### SERVICE KITS & MISCELLANEOUS (Cont.)

|         |                |   |   |
|---------|----------------|---|---|
|         |                |   | Repair Parts Kit -  |
|         | 143K65         | 1 | Carburetor Repair.  |
|         | 149K508        | 1 | Fuel Pump Repair (Replaces #149K75).                            |
| 185-829 | (CO)F600T-293  | 1 | Oil Pump Repair.  |
|         | (CO)F400T-202  | 1 | Water Pump Repair - For Pump F400K-3941.                        |
| 185-820 | (CO)F162T-152C | 1 | *Ring Kit, Piston - Standard Size - 4 Piston -                  |
|         | (CO)F162T-152C | 1 | For Re-Ring only (Expander Type).                               |
|         |                |   | For Re-Bore Only.   |
|         |                |   | STA-BIL (Gasoline additive) Prevents gum formation -            |
|         | 524-73         |   | 4 Ounce Can   |
|         | 524-74         |   | 16 Ounce Can  |
|         | 524-76         |   | 32 Ounce Can  |
|         | 526P90         |   | Paint, Touch-up (Pressurized Can) 12 Ounce - Mouse Grey Enamel. |

\* - Refer to "Oversize and Undersize" Chart.

# SPECIAL PURPOSE SECTION FOR HQ SERIES

## PENNSYLVANIA APPROVED GENERATING PLANTS

The parts contained in this section of the catalog apply to the Onan HQ Series "PENNSYLVANIA APPROVED" Generating Plants.

The "Penntan" Approved generating plant is a term applied to a plant designed to meet the rigid requirements published by the Commonwealth of Pennsylvania, Department of Labor and Industry, as contained in "REGULATIONS FOR PROTECTION FROM FIRE AND PANIC". "Standby" service generating plants (the source supplying energy for lighting when the normal source fails) are subject to these regulations when located in the area under its jurisdiction. These plants are quickly recognized by the number 30 appearing in the model of gasoline fuel plants or by the number 31 appearing in the model of gaseous fuel plants.

All "Penntan" Approved plants are special models, and are 36-volt, self-starting.

REFER FIRST TO THIS SEPARATE SUPPLEMENTARY LISTING OF SPECIAL PARTS FOR "PENNSYLVANIA APPROVED" PLANTS. IF THE PART CAN NOT BE FOUND IN THIS SECTION, REFER TO THE FOREGOING MAIN ILLUSTRATED LIST FOR ORDINARY MODELS.

Parts in this section apply to the following "Penntan" Approved plants. For plants of other designations use the list as a guide only. Select parts according to the Plant Key Number listed for each model. If it is necessary to refer back to the Main List for some parts, remember the correct part key for your unit as listed in the Plant Data Table.

Plant Data Table

| MODEL & SPEC NO. | UNHOUSED  | WATTS  | VOLTS | ELECTRICAL DATA | CYCLES | PHASE | WIRE | PARTS KEY NO. |
|------------------|-----------|--------|-------|-----------------|--------|-------|------|---------------|
| 101Q-1830        | 101Q-1830 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1831        | 101Q-1831 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1832        | 101Q-1832 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1833        | 101Q-1833 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1834        | 101Q-1834 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1835        | 101Q-1835 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1836        | 101Q-1836 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1837        | 101Q-1837 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1838        | 101Q-1838 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1839        | 101Q-1839 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1840        | 101Q-1840 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1841        | 101Q-1841 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1842        | 101Q-1842 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1843        | 101Q-1843 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1844        | 101Q-1844 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1845        | 101Q-1845 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1846        | 101Q-1846 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1847        | 101Q-1847 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1848        | 101Q-1848 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1849        | 101Q-1849 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1850        | 101Q-1850 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1851        | 101Q-1851 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1852        | 101Q-1852 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1853        | 101Q-1853 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1854        | 101Q-1854 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1855        | 101Q-1855 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1856        | 101Q-1856 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1857        | 101Q-1857 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1858        | 101Q-1858 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1859        | 101Q-1859 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1860        | 101Q-1860 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1861        | 101Q-1861 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1862        | 101Q-1862 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1863        | 101Q-1863 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1864        | 101Q-1864 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1865        | 101Q-1865 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1866        | 101Q-1866 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1867        | 101Q-1867 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1868        | 101Q-1868 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1869        | 101Q-1869 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1870        | 101Q-1870 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1871        | 101Q-1871 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1872        | 101Q-1872 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1873        | 101Q-1873 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1874        | 101Q-1874 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1875        | 101Q-1875 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1876        | 101Q-1876 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1877        | 101Q-1877 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1878        | 101Q-1878 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1879        | 101Q-1879 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1880        | 101Q-1880 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1881        | 101Q-1881 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1882        | 101Q-1882 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1883        | 101Q-1883 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1884        | 101Q-1884 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1885        | 101Q-1885 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1886        | 101Q-1886 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1887        | 101Q-1887 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1888        | 101Q-1888 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1889        | 101Q-1889 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1890        | 101Q-1890 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1891        | 101Q-1891 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1892        | 101Q-1892 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1893        | 101Q-1893 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1894        | 101Q-1894 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1895        | 101Q-1895 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1896        | 101Q-1896 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1897        | 101Q-1897 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1898        | 101Q-1898 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1899        | 101Q-1899 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |
| 101Q-1900        | 101Q-1900 | 10,000 | 120   | 60              | 1      | 1     | 1    | 1             |

\* - Specification numbers 30 (Gasoline Fuel Plant), and 31 (Gaseous Fuel Plant) may appear just before the diagonal line or just after the diagonal line (A). Standard unboxed units with no additional special features appear as in table, however if a unboxed unit has additional special features the number 1 before the diagonal line is deleted in favor of a number 30 or 31. (Example: an unboxed Standard Penntan Approved model 101Q-1830 becomes a 101Q-1830/31 when an Optional Water Panel is added. The number 30 designates that the unit is unboxed and that it has a Water Panel.)

The last letter in the Model Identification (101Q-1831) is the Spec (Specification) Letter. This letter addresses with manufacturing changes. (A to H, B to C, etc.).

### ORIENTATION

General changes by the manufacturer which resulted in a model spec advance, include the following for Penntan Approved Plants:

MODEL SPEC "A" - Original design.

MODEL SPEC "B" - Ignition changed from Wico Magneto using separate shielding, to Fairbanks Morse Magneto integrally shielded.

MODEL SPEC "C" - Generator changed, from earlier armature on same shaft with alternator rotor, to exciter armature (exciter 110) on separate shaft and removable from alternator rotor.

MODEL SPEC "D" - Control changed for use with low and high charge rate line transfer control.

MODEL SPEC "E" - On gas fuel plants, relay added to control panel for controlling automatic valve in gas fuel supply line.

MODEL SPEC "F" - On gasoline fuel plants, relay added to control panel for controlling choke.

MODEL SPEC "G" - Ignition system changed to battery ignition in place of magneto ignition.

MODEL SPEC "H" - On unboxed plants, control panel redesigned.

MODEL SPEC "I" - Base and Exhaust Manifold changed from DOWRY exhaust to UP exhaust. New air filter housings, Control and Generator Adapters on both housed and unboxed plants.

## REF. NO. PART NO. QUANT. USED DESCRIPTION PENNSYLVANIA APPROVED

### SUPPLEMENT TO FIG. 9 (FUEL SYSTEM GROUP-GASOLINE)

NOTE: Use these parts in place of (or in addition to) parts listed in the main illustrated list. For gasoline fuel plants.

|         |   |   |
|---------|---|---|
| 153P119 | 1 | Choke, Automatic - Sisson 32 Volt.  |
| 153A62  | 1 | Cover, Onan Choke (32-40 Volt heating element) Use only on plants with Special Water Cooled Manifold. |

### SUPPLEMENT TO FIG. 12 (FUEL SYSTEM GROUP - GAS ONLY)

NOTE: Use these parts in place of (or in addition to) parts listed in the main illustrated list. For gaseous fuel plants.

|         |   |   |
|---------|---|---|
| 338B141 | 1 | Harness Assembly, Wiring - Gas Solenoid Valve.  |
| 307P387 | 1 | Valve, Gas Solenoid - Gas Fuel Pipeline - (Standard Begin Spec D, Optional Prior) Listed also in Control group. |
| 149-558 | 1 | Strainer, Gas Fuel - In Gas Supply Line (Standard Begin Spec D, Optional Prior).                                |

### DAY TANK GROUP - COMPLETE (Gasoline Plants)

NOTE: This group is similar to items listed in Fig. 13 of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers.

|         |   |   |
|---------|---|---|
| 159A540 | 1 | Tank Assembly, Reservoir (Day) Includes parts marked * -                                      |
| 159A542 | 1 | Prior to Spec F (Unhoused Plants).  |
| 159A664 | 1 | Prior to Spec F (Housed Plants).  |
| 159A737 | 1 | Prior to Serial #643150 Spec F Models only (Housed or Unhoused) Includes Parts marked * or †. |
| 159B294 | 1 | Begin Serial #643150 during Spec F (Housed or Unhoused) Includes Parts marked * or †.         |
| 159A121 | 1 | *Tank, Reservoir ("Day" or "Standby") -   |
| 159A641 | 1 | *Band, Reservoir Tank -   |
|         |   | Prior to Spec F.  |
|         |   | Begin Spec F.   |

| REF. NO.  | PART NO. | QUANT. USED | DESCRIPTION   | PENNSYLVANIA APPROVED |
|---|----------|-------------|---|-----------------------|
| DAY TANK GROUP - COMPLETE (Gasoline Plants) Cont. |          |             |   |                       |
|   |          |             | *Bracket, Reservoir Tank Mounting -   |                       |
| 159B302   | 1        |             | Prior to Spec F (Housed Plants).  |                       |
| 159A419   | 1        |             | Prior to Spec F (Unhoused Plants).  |                       |
| 159A657   | 1        |             | Begin Spec F (Housed or Unhoused).  |                       |
| 502-24  | As Req.  |             | *Elbow, Male Compression (Not used for Fuel Inlet on Housed Plants Prior Spec F).                     |                       |
| 502-20  | 1        |             | *Elbow, Street (Fuel Inlet) Housed Plants Prior to Spec F.  |                       |
|   |          |             | *Bushing, Pipe Reducer -  |                       |
| 505-17  | 1        |             | Prior to Serial #643150.  |                       |
| 159A705   | 1        |             | Begin Serial #643150 (Restricted)   |                       |
|   |          |             | *Valve, Fuel Shut-off -   |                       |
| 504A13  | 1        |             | Prior to Spec F (Housed Plants).  |                       |
| 504A39  | 1        |             | Prior to Serial #643150 Spec F Models only (Housed or Unhoused) Also Prior to Spec F Unhoused Plants. |                       |
| 505-57  | 2        |             | *Plug, Pipe - Drain (Square Head - 1/8") (NOTE: Quantity is 1 only Prior to Serial #643150)           |                       |
| 159A345   | 1        |             | Tubing, Copper (5/16" x 12 feet) Vent Line - Prior to Serial #643150.                                 |                       |
| 502-116   | 1        |             | Connector, Compression - Includes Nut & Sleeve (Vent Line) - Prior to Serial #643150.                 |                       |
| 505-28  | 1        |             | Coupling, Pipe (3/8") Vent Line - Prior to Serial #643150.  |                       |
| 505-16  | 1        |             | Bushing, Pipe Reducer (3/8 to 1/8") Vent Line - Prior to Serial #643150.                              |                       |
|   |          |             | Line, Fuel - Pump to Reservoir Tank -   |                       |
| 149A521   | 1        |             | Prior to Spec F (Unhoused Plants).  |                       |
| 501A7   | 1        |             | Prior to Spec F (Housed Plants) Flexible.   |                       |
| 159A656   | 1        |             | †Begin Spec F (Housed or Unhoused).   |                       |
|   |          |             | Line, Fuel - Reservoir Tank to Carburetor -   |                       |
| 149A522   | 1        |             | Prior to Spec F (Unhoused Plants).  |                       |
| 501A7   | 1        |             | Prior to Spec F (Housed Plants) Flexible.   |                       |
| 159C655   | 1        |             | †Begin Spec F (Housed or Unhoused).   |                       |
| 159-41  | 1        |             | Cap, Vent - Prior to Serial #643150.  |                       |
| 415A55  | 1        |             | Bracket, Vent Cap - Prior to Serial #643150.  |                       |
| 307P567   | 1        |             | Valve, Solenoid - Reservoir Tank - Begin Serial #643150.  |                       |
| 502-82  | 1        |             | Nipple, Hex - Solenoid Valve to Tank - Begin Serial #643150.  |                       |
| 501A5   | 1        |             | Line, Fuel Return - Flexible - Begin Serial #643150.  |                       |
| 502-2   | 1        |             | Elbow, Inverted Male - Fuel Return Line to Restricted Fitting - Begin Serial #643150.                 |                       |

PARTS LIST

| REF. NO.   | PART NO. | QUANT. USED | DESCRIPTION   | PENNSYLVANIA APPROVED |
|--|----------|-------------|---|-----------------------|
| SUPPLEMENT TO FIG. 15 (BATTERY IGNITION GROUP) Begin Spec E                                  |          |             |   |                       |
| NOTE: Use this part in place of coil listed in main illustrated list.                        |          |             |   |                       |
| 166P184  | 1        |             | Coil, Ignition - 24 Voll.                                 |                       |
| SUPPLEMENT TO FIG. 17 (COOLING SYSTEM AND MOUNTING GROUP)                                    |          |             |   |                       |
| NOTE: Use this part in place of Fan Belt listed in main illustrated list.                    |          |             |   |                       |
| 511-31   | 1        |             | Belt, Fan (43-1/2") Plant DOES NOT have Charge Generator. |                       |
| SUPPLEMENT TO FIG. 18 (STARTING MOTOR AND CHARGE GENERATOR GROUP)                            |          |             |   |                       |
| NOTE: Use these parts in place of (or in addition to) parts listed in main illustrated list. |          |             |   |                       |
| 416A133  | 5        |             | Cable, Battery Jumper - 7-1/2".                           |                       |
| 416A37   | 2        |             | Cable, Battery - 48".                                     |                       |
| SUPPLEMENT TO FIG. 19 (HOUSING GROUP - HOUSED PLANTS PRIOR TO SPEC F)                        |          |             |   |                       |
| NOTE: Use these parts in place of (or in addition to) parts listed in main illustrated list. |          |             |   |                       |
|  |          |             | Guard, Fan -  |                       |
| 130C329  | 1        |             | Left Hand.  |                       |
| 130C342  | 1        |             | Right Hand (No provision for charging generator).         |                       |

PARTS LIST

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

SUPPLEMENT TO FIG. 20 (MOUNTING GROUP - UNHOUSED PLANTS PRIOR TO SPEC F)

NOTE: Use this part in place of part listed in main illustrated list.

|         |   |  |
|---------|---|--|
| 130C331 | 1 | Guard, Fan - Right Hand (No provision for charging generator). |
|---------|---|--|

VOLTAGE REGULATOR GROUP (36 Volt Cranked Plants) COMPLETE

NOTE: This group is similar to items listed in Fig. 21 of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers.

|         |   |   |
|---------|---|---|
| 30SP59  | 1 | Plug-In Unit, Voltage Regulator.                  |
|         |   | Rheostat, Voltage Regulator - Model "H" -         |
| 303-84  | 1 | Prior to Spec C (500 Ohm).                        |
| 303-85  | 1 | Begin Spec C (250 Ohm).                           |
| 303-32  | 1 | Knob, Rheostat.                                   |
| 305C146 | 1 | Base Assembly, Rheostat.                          |
| 312A15  | 1 | Condenser, Suppression - 0.1 Mfd. - Begin Spec D. |
| 305A144 | 4 | Spacer, Regulator Mounting.                       |
| 508-31  | 4 | Grommet, Rubber - Regulator Mounting.             |

CONTROL GROUP - HOUSED PLANTS - COMPLETE

NOTE: This group is similar to items listed in Figs. 22 and 22A of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers.

|          |   |  |
|----------|---|--|
|          |   | Panel Only - Engine Control Portion -  |
| 301C1037 | 1 | Prior to Spec E.   |
| 301C1491 | 1 | Spec E Only.   |
| *        | 1 | Begin Spec F. (* - Order by description. Include complete Model and Serial Number of Plant). |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

CONTROL GROUP - HOUSED PLANTS - COMPLETE (Cont.)

|          |         |   |
|----------|---------|---|
|          |         | Panel Only - AC Meter Portion -   |
|          |         | Prior to Spec F -   |
| 301C1038 | 1       | Parts Key No. 1 (115 Volt Plants Only), and Parts Key No. 2.            |
| 301C1054 | 1       | Parts Key No. 1 (115/230 Volt Plants only).                             |
|          |         | Begin Spec F -  |
| 301C1356 | 1       | Parts Key No. 1 (115/230 Volt Plants only).                             |
| 301C1374 | 1       | Parts Key No. 2.  |
| 301D1106 | 1       | Box, Control - Begin Spec F.  |
| 308-2    | 1       | Switch, Panel Light - Prior to Spec F.                                  |
|          |         | Receptacle, Panel Light -   |
| 322-5    | 1       | Prior to Spec F.  |
| 322P49   | 1       | Begin Spec F (Includes Switch).   |
|          |         | Lamp, Panel Light -   |
| 322-4    | 1       | Prior to Spec F.  |
| 322-26   | 1       | Begin Spec F.   |
| 193P5    | 1       | Gauge, Engine Oil Pressure (Mechanical) Includes "U" Clamp.             |
| 193P8    | 1       | Gauge, Water Temperature (Thermostatic) Includes Clamp.                 |
|          |         | Voltmeter, AC (Select according to rating) -                            |
| 302-40   | 1       | 0-150.  |
| 302-41   | 1       | 0-300.  |
|          |         | Ammeter, AC (Select according to rating) -                              |
| 302-124  | 1       | 0-35.   |
| 302-9    | 1       | 0-75.   |
| 302-11   | 1       | 0-100.  |
| 302-126  | 1       | 0-140.  |
| 302-12   | 1       | 0-150.  |
| 302B13   | 1       | 0-200.  |
|          | As Req. | Transformer, Current (Check Current Transformer Nameplate for rating) - |
| 302B123  |         | 35/5 Ratio (Use with 0-35 AC Ammeter).                                  |
| 302B76   |         | 75/5 Ratio (Use with 0-75 AC Ammeter).                                  |
| 302B78   |         | 100/5 Ratio (Use with 0-100 AC Ammeter).                                |
| 302B125  |         | 140/5 Ratio (Use with 0-140 AC Ammeter).                                |
| 302B79   |         | 150/5 Ratio (Use with 0-150 AC Ammeter).                                |
| 302B106  |         | 200/5 Ratio (Use with 0-200 AC Ammeter).                                |

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|----------|----------|-------------|-------------|-----------------------|
|----------|----------|-------------|-------------|-----------------------|

CONTROL GROUP - HOUSED PLANTS - COMPLETE (Cont.)

|         |   |   |
|---------|---|---|
| 315B2   | 1 | Transformer, Potential - Adapts AC Voltage Regulator - Parts Key No. 1 (115 Volt Plant only).   |
| 302P68  | 1 | Meter, Running Time.  |
| 301C448 | 1 | Panel, Running Time Meter Mounting (Mounts to Housing Rear End Cover) Prior to Spec F.  |
| 308B22  | 1 | Switch, Meter Selector - Parts Key No. 2.   |
|         |   | Resistor -  |
| 304-223 | 1 | Panel Light Circuit (200 Ohm, 10 Watt) 5/16" x 1-3/4" (Between Panel Light and Switch).   |
| 304-99  | 1 | Running Time Meter Circuit (5,000 Ohm, 10 Watt) 5/16" x 1-3/4".   |
| 304-62  | 1 | Manual Field Rheostat Circuit (25 Ohm, 25 Watt) 3/4" x 2" - Prior to Spec E.  |
| 304-19  | 1 | Start Circuit (3 Ohm, 50 Watt) 3/4" x 4" (Between Start-Stop Switch and Terminal Block No. 6 Place).  |
| 304A11  | 1 | Stop Circuit (50 Ohm, 25 Watt) 9/16" x 2" (Between Start-Stop Switch and Terminal Block No. 7 Place).   |
| 304A37  | 1 | Ignition Circuit (6 Ohm, 75 Watt) 3/4" x 6" (Between Start-Stop Switch and Terminal Block No. 8 Place) Begin Spec E.                                  |
| 304A112 | 1 | Choke Relay Circuit - Adjustable (100 Ohm, 25 Watt) 9/16" x 2" (Between Choke Relay and Start-Stop Switch) Begin Spec D on Gasoline Fuel Plants only. |
| 304A121 | 1 | Solenoid Valve Circuit - Gas Fuel Plants only - Spec D only (10 Ohm, 10 Watt) 5/16 x 1-3/4".  |
| 304P32  | 1 | Solenoid Valve Circuit - Gas Fuel Plants only - Begin Spec E (15 Ohm, 10 Watt) Start-Stop Relay to Terminal Block No. 5 Place.                        |
|         |   | Switch, Start-Stop -  |
| 308-9   | 1 | Prior to Spec E (Push Button Type).   |
| 308-26  | 1 | Begin Spec E.   |
|         |   | Switch, Toggle -  |
| 308B68  | 1 | Prior to Spec C (Regulator On - Rheostat On).   |
| 308-2   | 1 | Begin Spec E (Electric Start-Hand Crank).   |
| 338B141 | 1 | Harness Assembly, Wiring - Start Solenoid.  |
| 306A98  | 1 | Relay, Stop - Prior to Spec E.  |
| 306A139 | 1 | Relay, Start-Stop - Begin Spec E.   |
| 307B4   | 1 | Relay, Choke - Gasoline Fuel Plants Only - Begin Spec D.  |
| 307B234 | 1 | Solenoid, Start.  |
| 307P387 | 1 | Valve, Gas Fuel Solenoid (Gaseous Fuel Plants) Standard Begin Spec D, Optional Prior.   |

PARTS LIST

| REF. NO. | PART NO. | QUANT. USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|----------|----------|-------------|-------------|-----------------------|
|----------|----------|-------------|-------------|-----------------------|

CONTROL GROUP - HOUSED PLANTS - COMPLETE (Cont.)

|         |         |   |
|---------|---------|---|
|         | As Req. | Block, Terminal (Select by description) -   |
| 332A532 |         | 5 Place (3-25/32" Long).  |
| 332A18  |         | 4 Place (2-1/2" Long) Designated B+, 1, 2, 3.   |
| 332A391 |         | 4 Place (3-7/32" Long).   |
| 332A513 |         | 3 or 4 Place (Specify Phase & Voltage) 13-3/8" Long strip with 3 or 4 holes (Begin Spec F). |
| 332A188 |         | 3 Place (7" Long strip with 3 holes).   |
| 332A406 |         | 3 Place (2-11/16" Long).  |
| 332A21  |         | 1 Place - Moulded (1-3/4" x 2-1/8" x 1-1/2" tall) With hole for Output Stud.                |
|         |         | Strip, Terminal Block Marker (Select by description) -                                      |
| 332A575 |         | For 5 Place Block (Marked 4, 5, 8, 7, 8).   |
| 332A427 |         | For 4 Place, 3-7/32" Block (Marked 4, 5, 8, 7).   |
| 332A574 |         | For 4 Place, 3-7/32" Block (Marked 2, 3, 4, 5).   |
| 332A426 |         | For 3 Place, 2-11/16" Block (No markings).  |
|         |         | Stud, Output Terminal - Prior to Spec F -   |
| 332A19  | As Req. | 3/8-16 x 3-1/4" (Insulated).  |
| 332A56  | As Req. | 3/8-16 x 2-1/2" (Grounded).   |
| 332A23  | As Req. | Bushing, Adapter - For 1 Place Moulded Block - Prior to Spec F.                             |
| 332A230 | As Req. | Terminal, Output Stud - Solderless - Prior to Spec F.                                       |
|         |         | Condenser - 0.1 Mfd. - Output Suppression -   |
| 312A15  | As Req. | Parts Key No. 1 - (1) 115 Volt, (2) 230 Volt.   |
| 312A22  | 3       | Parts Key No. 2.  |
|         |         | Rheostat, Field - Manual Voltage Control (Note: Regulator Rheostat in Separate group) -     |
| 303-69  | 1       | For Plants Prior to Spec C having #304-62 Resistor (200 Ohm).                               |
| 303-31  | 1       | For Plants Prior to Spec C NOT having #304-62 Resistor (300 Ohm).                           |
| 303P92  | 1       | For Plants Begin Spec C (Includes #308P131 Switch) 100 Ohm.                                 |
| 308P131 | 1       | Switch, Rheostat - Begin Spec C (Included with #303P92 Rheostat).                           |
| 303-32  | 1       | Knob, Field Rheostat.   |
|         |         | Clamp, Current Transformer Mounting - Begin Spec F -  |
| 302A235 | As Req. | Inside of Coil - 1 per coil.  |
| 302A236 | As Req. | Outside of Coil - 1 per coil.   |
| 508P63  | 1       | Grommet, Rubber (2-1/4 x 3-3/8 x 1/4") For 2-3/4" Hole.                                     |

PARTS LIST



| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

CONTROL GROUP - HOUSED PLANTS - COMPLETE (Cont.)

|         |         |   |
|---------|---------|---|
| 302A108 | 1       | Panel, Current Transformer Coil Mounting - Prior to Spec F -            |
| 302A109 | 1       | Parts Key No. 1 (8-1/2 x 3 x 1/4" Bakelite).                            |
|         |         | Parts Key No. 2 (11 x 3 x 1/4" Bakelite).                               |
| 302A127 | 2       | Bracket, Current Transformer Coil Panel Mounting - Prior to Spec F -    |
| 302A128 | 2       | Parts Key No. 1.  |
| 302A154 | As Req. | Parts Key No. 2.  |
| 501A9   | 1       | Hook, Current Transformer Coil Mounting (2 per Coil) - Prior to Spec F. |
| 502-20  | 1       | Line, Flexible - 3/8" - Oil Gauge.                                      |
|         |         | Elbow, Street - Oil Gauge Line.   |

CONTROL GROUP - UNHOUSED PLANTS - COMPLETE

NOTE: This group is similar to Fig. 23 of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers except if Unit has an optional Meter Panel select AC Ammeter, Current Transformers etc. from the preceding Housed Plant Control Group.

|          |   |  |
|----------|---|--|
| 301D1004 | 1 | Box, Control -   |
| 301D1173 | 1 | Prior to Spec C.   |
| 301D1106 | 1 | Spec C and D.  |
|          |   | Begin Spec E.  |
|          |   | Panel, Control (Upper) WITH provisions for AC Output Ammeter (Standard equipment Prior to Spec C. Optional equipment Begin Spec C) - |
| 301C1053 | 1 | Parts Key No. 1 (115 Volt Plant only) Prior Spec C.  |
| 301C975  | 1 | Parts Key No. 1 (115/230 Volt Plant only) Prior Spec C.  |
| 301C889  | 1 | Parts Key No. 2 Prior Spec C.  |
| 301C1374 | 1 | Parts Key Nos. 1 and 2 Begin Spec E.   |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

CONTROL GROUP - UNHOUSED PLANTS - COMPLETE (Cont.)

|          |   |  |
|----------|---|--|
| 301C1308 | 1 | Panel, Control (Upper) NO provisions for AC Output Ammeter (Standard equipment Begin Spec C) - |
| 301C1022 | 1 | Parts Key No. 1 (115 Volt Plant only) Spec C and D.  |
| 301C1290 | 1 | Parts Key No. 1 (115/230 Volt Plant Only) Spec C and D.  |
| 301C1317 | 1 | Parts Key No. 2 Spec C and D.  |
|          |   | Parts Key Nos. 1 and 2 Begin Spec E.   |
| 301C926  | 1 | Panel, Control (Lower) -   |
| 301C1196 | 1 | Prior to Spec C.   |
| 301C1490 | 1 | Spec C and D.  |
| *        | 1 | Spec E.  |
| 301A1061 | 1 | Begin Spec F (* - Order by description. Include complete Model and Serial Number of plant).    |
| 301A1062 | 1 | Cover, Manual Rheostat Knob - Begin with Serial #503547.                                       |
| 301B1136 | 1 | Cover, Regulator On- Rheostat On Switch - Spec B Plants Prior to Serial #503547.               |
|          |   | Cover, Output Lead (Front of Control Box) Begin Spec E.  |
|          |   | Bracket, Control Box Mounting -  |
| 301B925  | 1 | Left Hand Bracket -  |
| 301B1145 | 1 | Prior to Spec C.   |
| 301B1124 | 1 | Spec C and D.  |
|          |   | Begin Spec E.  |
| 301B960  | 1 | Right Hand Bracket -   |
| 301B1144 | 1 | Prior to Spec C.   |
| 301B1125 | 1 | Spec C and D.  |
|          |   | Begin Spec E.  |
| 303-69   | 1 | Rheostat, Field - Manual Voltage Control (Note: Regulator Rheostat in Separate Group) -        |
| 303-31   | 1 | For Plants Prior to Spec C having #304-62 Resistor (200 Ohm).                                  |
| 303P92   | 1 | For Plants Prior to Spec C NOT having #304-62 Resistor (300 Ohm).                              |
| 308P131  | 1 | For Plants Begin Spec C (Includes #308P131 Switch) 100 Ohm.                                    |
| 303-32   | 1 | Switch, Rheostat - Begin Spec C (Included with #303P92 Rheostat).                              |
| 308-26   | 1 | Knob, Field Rheostat.  |
|          |   | Switch, Start-Stop.  |
| 308B68   | 1 | Switch, Toggle -   |
| 308-2    | 1 | Spec B Plants Prior to Serial #503547 (Regulator On-Rheostat On).                              |
|          |   | Electric Start - Hand Crank.   |

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

CONTROL GROUP - UNHOUSED PLANTS - COMPLETE (Cont.)

|          |         |  |  |  |
|----------|---------|--|--|--|
| 306A98   | 1       |  | Relay, Stop - Prior to Spec E.   |  |
| 302A235  | As Req. |  | Clamp, Current Transformer - For plants having Output Ammeters (Prior to Spec C) -   |  |
| 302A238  | As Req. |  | Inside of Coll - 1 Per Coll.   |  |
|          |         |  | Outside of Coll - 1 Per Coll.  |  |
| 302-40   | 1       |  | Voltmeter, AC (Select according to rating) -   |  |
| 302-41   | 1       |  | 0-150.   |  |
| 308B22   | 1       |  | 0-300.   |  |
| 308-12   | 1       |  | Switch, Ammeter Selector - For Plants having Output Ammeters-Parts Key No. 2 Prior to Spec C.                              |  |
| 332A440  | 2       |  | Switch, Voltmeter Selector - For Plants having Output Ammeters - Parts Key No. 2 Begin Spec C.                             |  |
| 193P6    | 1       |  | Jumper, Output Terminal - Parts Key No. 1.   |  |
| 315B2    | 1       |  | Gauge, Oil Pressure - Mechanical.  |  |
| 307B4    | 1       |  | Transformer, Potential - Adapts AC Voltages Regulator - Parts Key No. 1 (115 Volt Plants only).                            |  |
| 306A139  | 1       |  | Relay, Choke - Used only with Slisson Choke. NOT with Onan Choke - Gasoline Fuel Plants only.                              |  |
|          |         |  | Relay, Gas Fuel Solenoid Valve - Standard Equipment begin Spec D, Optional Prior - Gaseous Fuel Plants only.               |  |
| 307B234  | 1       |  | Solenoid, Start.   |  |
| 301C1001 | 1       |  | Cover, Start Solenoid.   |  |
| 301A1005 | 1       |  | Cover, Start Solenoid Plate.   |  |
| 307A272  | 1       |  | Bracket, Start Solenoid Mounting.  |  |
| 307P387  | 1       |  | Valve, Gas Fuel Solenoid - Standard Equipment begin Spec D, optional Prior - Gaseous Fuel Plants only.                     |  |
| 506P63   | 1       |  | Grommet, Rubber (2-1/4 x 3-3/8 x 1/4") For 2-3/4" Hole - Begin Spec E.   |  |
| 312A15   | As Req. |  | Condenser - 0.1 Mfd. - Output Suppression - Begin Spec D.  |  |
|          |         |  | Resistor -   |  |
| 304-62   | 1       |  | Manual Field Rheostat Circuit (25 Ohm, 25 Watt) 3/4 x 2" (Used with Rheostat #303-69) Prior to Spec C.                     |  |
| 304-19   | 1       |  | Start Circuit (3 Ohm, 50 Watt) 3/4 x 4".   |  |
| 304A11   | 1       |  | Stop Circuit (50 Ohm, 25 Watt) 9/16 x 2" (Note: 1 additional also used on plants with Solenoid Valve Relay).               |  |
| 304-112  | 1       |  | Choke Relay Circuit (100 Ohm, 25 Watt) 9/16 x 2" Adjustable (Gasoline Fuel Plants Only).                                   |  |
| 304A121  | 1       |  | Solenoid Valve Circuit (10 Ohm, 10 Watt) 5/16 x 1-3/4" - Gaseous Fuel Plants only (Standard Begin Spec D, Optional Prior). |  |
| 304A37   | 1       |  | Ignition Circuit (6 Ohm, 75 Watt) 3/4 x 6" (Begin Spec E).   |  |

PARTS LIST

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

CONTROL GROUP - UNHOUSED PLANTS - COMPLETE (Cont.)

|         |   |         |   |  |
|---------|---|---------|---|--|
| 332A391 | 1 | As Req. | Block, Terminal (Select by description) -   |  |
| 332A419 | 1 |         | 4 Place (3-7/32" Long).   |  |
| 332A513 | 1 |         | 4 Place - Output Terminal Prior Spec E (6-1/4" Long).   |  |
|         |   |         | 3 or 4 Place - Output Terminal Begin Spec E (Specify Phase & Voltage) 13-3/8" Long strip with 3 or 4 holes. |  |
| 332A406 | 1 |         | 3 Place (2-11/16" Long) Connection for Solenoid Valve or Choke Begin Spec D.                                |  |
| 332A333 | 1 |         | 2 Place (2-3/32" Long).   |  |
| 332A447 | 1 |         | Strip, Terminal Block Marker (Select by description) -  |  |
| 332A492 | 1 |         | For 4 Place, 3-7/32" Block (Marked B+, 1, 2, 3).  |  |
| 332A486 | 1 |         | For 4 Place, 6-1/4" Block (Marked T1, T2, T3, T0) Parts Key No. 4 Prior to Spec E.                          |  |
|         |   |         | For 4 Place, 6-1/4" Block (Marked T1, T2, T3, T4) Parts Key No. 1 (115/230 Volt only) Prior to Spec E.      |  |
| 332A497 | 1 |         | For 4 Place, 6-1/4" Block (Marked T1, T2) Parts Key No. 1 (115 Volt only) Prior to Spec E.                  |  |
| 332A426 | 1 |         | For 3 Place, 2-11/16" Block (No Markings) Begin Spec D.   |  |
| 332A499 | 1 |         | For 2 Place, 2-3/32" Block (No Markings).   |  |

GENERATOR GROUP - NON-REMOVABLE TYPE EXCITER ARMATURE - COMPLETE (SPEC A and B ONLY)

NOTE: This group is similar to Fig. 24 of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers.

|          |   |  |                          |  |
|----------|---|--|--------------------------|--|
| *        | 1 |  | Coil Set, Exciter Field. |  |
| 221A50   | 4 |  | Poleshoe, Exciter.       |  |
| 232B630  | 1 |  | Band, End Bell.          |  |
|          |   |  | Cover, Outlet -          |  |
| 232A746  | 1 |  | Housed Plants.           |  |
| 232A1036 | 1 |  | Unhoused Plants.         |  |
| 232B55   | 1 |  | Cover, Bearing.          |  |
| 232B57   | 1 |  | Gasket, Bearing Cover.   |  |

\* - Order by description. Includes complete Model and Serial Number of Plant.

PARTS LIST

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

## GENERATOR GROUP - NON-REMOVABLE TYPE EXCITER ARMATURE - COMPLETE (SPEC A and B ONLY) Cont.

|          |   |   |
|----------|---|---|
| 232A615  | 1 | Clip, Bearing - Anti-Rotation.                      |
| 211D42   | 1 | Belt, End.  |
| 212C187  | 1 | Rig Assembly, Brush - Includes Brushes and Springs. |
| *        | 1 | Frame Only, Exciter.                                |
| *        | 1 | Stator Assembly, Wound.                             |
| *        | 1 | Rotor Assembly, Wound - Includes Bearing.           |
| 232B165  | 1 | Scroll, Air.  |
| 205B33   | 1 | Blower, Air.  |
| 231D11   | 1 | Adapter, Generator to Engine.                       |
| *        | 1 | Band, Alternator Frame - Top or Bottom.             |
| 510A52   | 1 | Bearing, Ball - Double Sealed, Pre-lubricated.      |
| 232A619  | 2 | Screen, Air Intake.                                 |
|          |   | Spring, Brush - Constant Pressure Type -            |
| 212B1105 | 4 | Slip Ring Brush.                                    |
| 212B1106 | 4 | Commutator Brush.                                   |
|          |   | Brush -   |
| 214A46   | 4 | Collector Rings.                                    |
| 214A47   | 4 | Commutator.   |
| 403A95   | 1 | Bolt, Lifting Eye.                                  |
| 231D39   | 1 | Adapter, End Bell to Alternator.                    |
|          |   | Condenser -   |
| 312A17   | 1 | Commutator Brush - 0.5 Mfd.                         |
| 312A15   | 1 | Slip Ring Brush - 0.1 Mfd. (When Used).             |

\* - Order by description. Include complete Model and Serial Number of Plant.

| REF.<br>NO. | PART<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|-------------|----------------|-------------|-----------------------|
|-------------|-------------|----------------|-------------|-----------------------|

## GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE - COMPLETE (BEGIN SPEC C)

NOTE: This group is similar to Fig. 25 of the main list, however this group is complete and it is not necessary to refer elsewhere for part numbers.

|          |   |   |
|----------|---|---|
|          |   | Adapter, Generator to Engine -                            |
| 231D11   | 1 | Spec C, D and E.  |
| 231E79   | 1 | Begin Spec F.   |
| 205B33   | 1 | Blower, Air.  |
| 232B165  | 1 | Scroll, Air.  |
| *        | 1 | Rotor Assembly, Alternator - Includes Bearing.            |
| 515-130  | 1 | Key, Armature to Rotor Shaft.                             |
| *        | 1 | Stator Assembly, Wound.                                   |
| 510P63   | 1 | Bearing, Ball - Alternator Rotor.                         |
| *        | 1 | Band, Alternator Frame - Top or Bottom.                   |
| 212C194  | 1 | Rig Assembly, Brush - Alternator.                         |
| 232P1186 | 1 | Anti-Rotation Device, Bearing - Alternator Rotor Bearing. |
| 232A1187 | 1 | Spring, Anti-Rotation Device.                             |
| 211E95   | 1 | Bolt, Alternator End.                                     |
| 222A1423 | 1 | Coil Set, Exciter Field - Set of 4 Coils.                 |
| 221A86   | 4 | Shoe, Exciter Pole.                                       |
|          |   | Cover, Hand Hole - Alternator End Bell -                  |
| 232B1254 | 2 | Upper Left and Right.                                     |
| 232A1253 | 2 | Lower Left and Right (Screened).                          |
| 234B20   | 1 | Top - Outlet Lead.  |
| 201A738  | 1 | Armature, Exciter.  |
| 210D225  | 1 | Frame Only, Exciter.                                      |
| 212C211  | 1 | Rig Assembly, Exciter Brush.                              |
| 212C1143 | 1 | Holder, Exciter Brush Rig.                                |
|          |   | Condenser -   |
| 312A17   | 1 | Commutator Brush - 0.5 Mfd.                               |
| 312A15   | 1 | Slip Ring Brush - 0.1 Mfd. (Where Used).                  |
| 211C92   | 1 | Cover, Exciter End.                                       |

\* - Order by description. Include complete Model and Serial Number of Plant.

| REF.<br>NO. | PART.<br>NO. | QUANT.<br>USED | DESCRIPTION | PENNSYLVANIA APPROVED |
|-------------|--------------|----------------|-------------|-----------------------|
|-------------|--------------|----------------|-------------|-----------------------|

GENERATOR GROUP - REMOVABLE TYPE EXCITER ARMATURE - COMPLETE (BEGIN SPEC C) Cont.

|          |   |                                    |
|----------|---|------------------------------------|
| 214A17   | 4 | Brush, Commutator (DC) Exciter.    |
| 214A46   | 4 | Brush, Slip Ring (AC) Alternator.  |
|          |   | Spring, Brush -                    |
| 212A1011 | 4 | Commutator Brush - Exciter.        |
| 212B1105 | 4 | Slip Ring Brush - Alternator.      |
| 232B1205 | 1 | Washer, Armature Centering.        |
| 212A1142 | 4 | Clamp, Exciter Brush Rig Mounting. |

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PARTS LIST





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